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COMPUTERWORLD

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OS WARS
Windows NT isn't shipping, but that hasn't stopped early users. The Education Resources Institute is building an NT-based global student loan system. Meanwhile, IBM gets some free advice on how to pump up OS/2 sales. *Page 4*

LEGACY DATA
Desktop access to prerelational mainframe data gets easier as more connectivity options bridge the gap between the two. *Page 10.* Adobe plans to tackle the legacy of paper documents using OCR technology. *Page 56*

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While SNA managers struggle with internetworking (*page 61*), Hewlett-Packard attacks the low end of the market with two aggressively priced routers. *Page 62*

PC HARDWARE
"Green PCs" see the light of day at White House rollout. *Page 24.* Phenomenal growth causes Compaq to pause and catch its breath as it sets its sights on IBM. *Page 123*

Users tie 'partners' to profits

Bottom line key for outsourcing pacts

By Mark Halper
SAN FRANCISCO

■ Navistar International Corp. is once again evaluating whether to outsource its data centers. Only this time the company wants to structure a deal in which the price it pays the vendor will tie directly into how much product rolls off its assembly lines.

The $3.8 billion Chicago-based truck and engine company's tack is indicative of a sentiment taking hold among information systems chiefs: If outsourcing vendors are indeed business partners, then why shouldn't they link their compensation to their customers' business performance?

"We're trying to craft an arrangement that establishes a correlation between the intensity of the information utility and the amount of products we produce," said E. O. Stout, Navistar information organization vice president, who is investigating farming out operation of four data centers.

His idea was well-received by several of his IS counterparts who gathered at a Digital Consulting, Inc. outsourcing conference held here last week to glean insights for

'Partners,' *page 16*

Wireless nets gaining ground

Interoperable services, airborne E-mail pushing tech envelope

By Lynda Radosevich
ATLANTA

Airborne, interactive electronic mail edged closer to becoming a widespread corporate reality last week at the Electronic Mail Association conference.

Among the wireless milestones achieved were the first interoperability effort among radio-based networks, wireless versions of popular local-area network-based mail applications and cabled-to-wireless network links. These efforts pushed the technology ever closer to widespread use, although obstacles remain.

While many firms said they now have high hopes for wireless E-mail's potential, they confessed that the technology far from meets their large-scale needs because of such glaring barriers as insufficient network reach.

"Looking at the coverage maps, [wireless messaging] is not relevant for us yet," said Phillip Widing, computing technology analyst at Alcan Aluminum Corp., a Montreal manufacturer.

However, an industry interoperability turning point reached by start-up RadioMail Corp. in San Mateo, Calif., should ease this concern. The company demonstrated a gateway service, slated to be generally available in August, that lets users exchange messages across RAM Mobile Data and Ardis wireless packet data networks.

Such linkups would allow users to gain the cumulative geographic coverage of the interconnected networks. What would further enhance the benefit to users would be linking RAM Mobile Data and Ardis gateways into McCaw Cellular Corp.'s far-reaching cellular network, which is in its infancy in supporting data applications.

However, no announcements have yet been made in that area.

Filling in another piece of the wireless puzzle was Ericsson GE

Wireless, *page 14*

Enterprising insurers

Mobile pen computing greases way to faster, cheaper repairs

By Joanie M. Wexler
SAN RAMON, CALIF.

A graphical, database-oriented system in a suitcase from a unit of Automatic Data Processing, Inc. is saving many of today's fiercely competitive insurance carriers about $100 per automobile repair estimate.

This has translated into a 15% productivity gain for The Travelers Corp. in Hartford, Conn., said Paul Ramsey, PC claims director. Travelers has also realized a 50% service boost by chopping the entire estimating turnaround time from 96 hours to 48, he said.

Mobile computing, *page 10*

ADP's Gerhard Blandstrup *expects 2,500 Audapoint systems to be in use within 12 months*

Software upgrade costs rising

By Michael Vizard

Now that many corporate sites are well along in their transition from DOS to Windows, information systems directors have begun to notice that the price of PC software upgrades is edging higher as the cost of new product software falls.

With the average selling price of packaged applications falling about 15% a year, developers are looking to make up some of that lost revenue on upgrades. As a result, upgrade pricing has risen about 20% during the past two years, said Susan Borden, managing editor of the "Softletter" newsletter in Watertown, Mass.

"The software vendors have finally gotten smart and figured out that most of their sales are going to come from upgrades," noted Ron Kasper, senior vice president of finance and administration at Loral Aeronutronic, a unit of Loral Corp. based in Newport Beach, Calif.

"The price of the software upgrades is really an annuity for the software vendors," said Priscilla Tate, executive director of the Microcomputer Managers Association in New York.

But while software vendors will make more money from upgrades, IS shops said they are less inclined to buy every upgrade because installation and administration are the most expensive parts of upgrading.

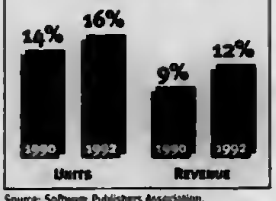
"It's not a big deal if upgrade prices rise so long as vendors don't

Upgrades, *page 20*

The cost of ownership

Upgrades have garnered a larger share of overall software sales despite the steady drop in new application tags

UPGRADE SALES AS A PERCENT OF TOTAL SOFTWARE SALES (ALL BUSINESS APPLICATIONS)



Source: Software Publishers Association, Washington, D.C.

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Network Systems

Recent events suggest the administrative burdens of your network could grow substantially.

KATHERINE LAMBERT

[redacted]

CLIENT/SERVER

HP will announce today plans to ship two key elements of its distributed computing strategy. *Page 16.* The **Tennessee Valley Authority** halts its project pending an investigation into personnel and technical problems with a PeopleSoft application. *Page 6*

PC SOFTWARE

Columnist Esther Dyson says the question of who will win the operating system war is a stupid one — but she offers some good answers anyway. *Page 37.* Users must cope with a rising tide of upgrade costs. *Cover 1.* Vendors, meanwhile, are rolling out new versions of their software. The arrival of **Lotus'** 1-2-3 Release 4 elicits promises from rival vendors; **Microsoft** will preview Word 6.0 at PC Expo; and **WordPerfect** plans OS/2 launch. *Page 2*

OBJECT TECHNOLOGY

At Object World last week, object-oriented vendors fearing competition from Microsoft united to support standards; DEC offered distributed capabilities for Microsoft's OLE and connection to OMG standards; and just weeks before **IBM** and **DEC** plan to ship their distributed object tool kits, **SunSoft** said it has shipped the developers' version of its long-awaited Project Distributed Objects Everywhere tool kit. *Page 12*

IN DEPTH

IS has many competitors for its application development services, including outsourcers and savvy end users. To stay valuable, IS should concentrate on its unique strengths, including enterprisewide integration and soup-to-nuts implementation skills. IS chief Trav Waltrip at Travelers adds central oversight to that list. *Page 101*

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Borland eyes low-end Paradox

DBMS sans programming language is on its way

By Michael Vizard
SCOTTS VALLEY, CALIF.

■ Borland International, Inc. is working on a stripped-down version of the Paradox for Windows database that is aimed squarely at end users, Borland Chief Executive Officer Philippe Kahn revealed last week.

To make it easier for end users to adopt Paradox, Kahn said, Borland intends to deliver a version of Paradox for Windows that does not include a programming language.

This offering is widely seen as an effort to counter Lotus Development Corp.'s recent acquisition of Approach Software Corp., which makes an end-user relational database that does not include a programming language.

However, some Paradox users suggested that Borland is overestimating the impact of low-end, language-free databases.

Borland's Philippe Kahn *has high hopes for a low-end Paradox*

"I think Borland's making a mistake with a lower end version of Paradox," said Jerry Lazarus, computer technology research specialist at Southern California Gas Co. in Los Angeles.

Buying a database, he said, is similar to buying shoes for kids. "You want to make sure you get them a pair that doesn't exactly fit so they'll grow into it," Lazarus said.

He also noted that because Paradox for Windows is already priced at $139, a low-end version is not likely to be priced low enough to make buying the $139 version unattractive.

Meanwhile, Microsoft Corp. executives said they have no intention of countering the Lotus and Borland moves with a low-end implementation of Access.

"Our focus will be on making Access easier to use, but we don't see how having two versions of a product would be successful," said Mary Engstrom, group product marketing manager for Access.

Although Kahn declined to say when Borland would deliver a stripped-down database, he said the effort would be a relatively simple endeavor. Unlike Approach, however, the end-user version of Paradox for Windows will provide an upgrade path for sites that may need an application development tool in the future, Kahn said.

Options weighed

Lazarus said that before opting for Paradox, he evaluated both Approach and Access.

"Approach is easy to use so long as you stay within its cookbook model for accessing data. But if you deviate from that, you have to jump through hoops, and there's no documentation," Lazarus said.

"Access is a fine product, but it has problems with its table lookup and documentation. Since we have mostly Microsoft applications, I thought we would go with Access. But Paradox has more usable power and was easier to learn," he added.

Serving clients

The planned version of Paradox for Windows aimed at end users is part of Borland's client/server strategy, which calls for Paradox and dBase IV databases to be used as front-end tools to access SQL database repositories from vendors such as Oracle Corp. and Sybase, Inc.

The cornerstone of Borland's client/server technology is the navigational SQL interface that Borland has built as part of its Integrated Database Application Programming Interface (IDAPI) initiative. That project allows applications to make calls to navigational databases such as dBase and SQL databases such as Oracle and Sybase.

"Our goal is to be totally promiscuous in terms of getting data," said Borland CEO Philippe Kahn.

The navigational SQL interface is a particularly important IDAPI component because it will allow users to browse SQL databases for the first time. "Today, if you browse using SQL, you'll lock the entire database [from other users]," Kahn said.

He claimed that while IDAPI supports joins across different data types, Microsoft's Open Database Connectivity (ODBC) SQL interface supports joins only within a single database.

Borland's client/server effort will begin in earnest in September, when it is expected to deliver SQL interfaces for Paradox for Windows.

"We have people using SQL in Paradox for DOS, so we're waiting on the SQL and IDAPI drivers in Paradox for Windows," said Jerry Lazarus, computer technology research specialist at Southern California Gas Co. in Los Angeles.

Microsoft recently delivered ODBC drivers for its Access for Windows database [CW, June 7], but it has not yet endorsed Borland's IDAPI initiative.

—Michael Vizard

Corrections

- The June 14 Firing Line evaluation of NextStep 3.1 for Intel included three ratings that did not appear in the accompanying chart: emulation, 2.3; price, 3.5; and compatibility, 3.5. The overall rating of 4.3 included these numbers.
- Intel Corp. Chairman Gordon Moore was incorrectly identified in a photo caption in the June 14 issue.
- Because of a reporting error, a chart in the June 14 issue incorrectly cited the purchase price of Unix System Laboratories, Inc. from Novell, Inc. That price is $320 million in stock.

Microsoft set to demo Word 6.0 at PC Expo show

By Michael Vizard
REDMOND WASH

■ Looking to give its already best-selling word processor for Windows additional momentum, Microsoft Corp. plans to demonstrate Word 6.0 at PC Expo in New York next week — even though the product has not yet gone into beta testing.

According to Microsoft, for the first time Word will incorporate a set of Wizards, or canned macros that automate specific tasks. These Wizards include creating memo, newsletter, agenda or resume formats; tabbed dialogs that put documents in a file folder format on a Windows screen; an enhanced version of WordArt; and support for the Object Linking and Embedding (OLE) 2.0 protocol.

Word 6.0 will also include a WordPerfect Corp. WordPerfect Help facility that provides keystroke compatibility between the two word processors, and a file conversion utility that translates WordPerfect files into Word files.

The new release is also expected to share a common macro language, tool bars and menus with other Microsoft applications.

Eye on integration

Industry analysts said improvements to Word 6.0 primarily focus on improving integration with other Microsoft applications and providing a migration path for WordPerfect users.

"In 1992, Word became the No. 1 word processor, passing WordPerfect. With this release they are clearly after WordPerfect," said Krystyna Filistowicz, an industry analyst at Dataquest, Inc.

Filistowicz attributed Microsoft's success to Microsoft Office, a suite of Microsoft applications the company said will account for more than half the Word and Excel spreadsheet units it sells by the end of this year.

"WordPerfect doesn't have a suite, and the relationship with Borland isn't going to provide the level of integration required [in suite sales] in the near term. People just aren't buying stand-alone packages anymore," Filistowicz said.

Microsoft said 90% of Windows word processor users own a spreadsheet, 87% own a presentation graphics package, and 51% include spreadsheet data in their documents.

To address this issue, Borland International, Inc. and WordPerfect teamed up to offer Borland Office earlier this year [CW, April 26].

In the meantime, executives at Lotus Development Corp. are counting on a revamped 1-2-3 for Windows spreadsheet — Release 4 (see story above) — to boost SmartSuite sales, which in turn will boost sales of Lotus' Ami Pro word processor.

"From a technical point of view, Ami Pro is the one to beat," Filistowicz said. Still, it only has a 10% market share.

In addition, Bill Jones, director of product management for Ami Pro, said users can expect to see support for OLE 2.0 and LotusScript, a common macro language for Lotus applications, in the next release of Ami Pro.

1-2-3 R4 spurs rival promises

By Michael Vizard
CAMBRIDGE MASS

Lotus Development Corp. last week made good on its promise to deliver 1-2-3 Release 4 for Windows, which immediately triggered decisions by Microsoft Corp. and Borland International, Inc. to preview major features that will make up the next releases of their respective spreadsheets.

1-2-3 Release 4 is expected to boost Lotus' fortunes in the spreadsheet market, which have suffered greatly under stiff competition from Microsoft's Excel and Borland's Quattro Pro Windows spreadsheets [CW, May 10].

"We had already decided to adopt Excel until I saw a beta copy of Release 4 of 1-2-3. It has the classic 1-2-3 menu and is easier to use. And we just adopted Lotus' Notes, so we want to become an all-Lotus shop for the application integration," said Bob Berry, a vice president at Geneva Business Research Corp., a mergers and acquisition firm in Irvine, Calif.

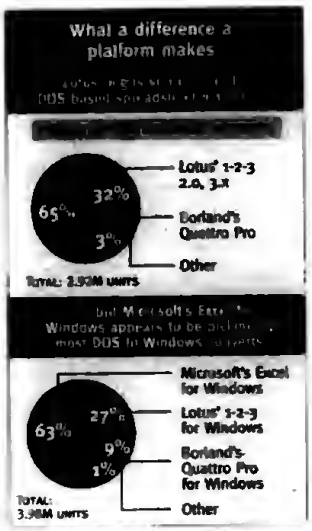
New features for Excel

However, while Lotus is gearing up to deliver 1-2-3 Release 4, Microsoft officials last week began outlining some of the broader capabilities that will be in the new release of Excel, which is expected to arrive by year's end.

New features in the next Excel release will include support for Microsoft's Object Linking and Embedding (OLE) 2.0, Open Database Connectivity (ODBC) drivers to link Excel to a variety of SQL databases, the first implementation of a common macro language for all Microsoft applications, support for multidimensional and document modeling, improved import/export capabilities and a hands-on charting model.

In addition, Excel 5.0 will be based on a common code shared by other Microsoft applications and will share a common set of menu commands and tool bars. These capabilities will form the nucleus of Microsoft's overall emphasis on more tightly integrating its applications, said Kathleen Schoenfelder, Microsoft group product marketing manager for Excel.

Meanwhile, Borland plans to extend the intelligence of the object technology it incorporates in Quattro Pro. The next release of Quattro Pro for Windows will include an Object Exchange Facility that will link multiple Quattro Pro users into workgroups, according to Borland Chief Executive Officer Philippe Kahn. The first iteration of Object Exchange Facility will be a Subscribe and Publish utility that will allow users to share spreadsheet data.



Source: International Data Corp., Framingham, Mass.

Kahn added that Borland will use its Object Exchange Facility technology to integrate its applications with WordPerfect Corp.'s namesake word processing software, which is included in the Borland Office suite. It is also negotiating with other firms that might support Object Exchange Facility.

Borland does not believe workgroup computing should require services found in operating systems or middleware products such as those found in the Notes offering, Kahn said. In addition, he promised that Quattro Pro for Windows Release 5 will include an intelligent facility that would automatically generate the appropriate chart for any range of selected data.

Lotus said it already provides a common menu structure across its applications and has made significant strides on integrating its applications under Release 2.0 of SmartSuite, which began shipping last week.

Lotus will add support for ODBC, and in the next major release of 1-2-3, the company will also deliver support for OLE 2.0 and a common macro language called LotusScript. It will incorporate the Bento object format from Apple Computer, Inc. as the underlying technology for linking its applications across platforms, said Paul Stroube, 1-2-3 for Windows product manager.

"OLE only works on Windows platforms," Stroube noted.

But whether all this jockeying for position among the spreadsheet vendors will result in any substantial shifts in market share remains to be seen.

"Users are getting apathetic about features. They all know that if they wait six months to a year, they'll get the same or better features from their vendors. They're more concerned about longevity, support and integration, so the competition is heating up on the high end and [is] focused on IS issues," said Daniel Oastelger, editor of "The Spreadsheet Consultant" newsletter in Cambridge, Mass.

Word processing

16-bit WordPerfect for OS/2 2.1 launch slated for next month

By Michael Vizard
OREM UTAH

With the help of three former OS/2 engineers recruited from IBM, WordPerfect Corp. announced last week that it will deliver a 16-bit implementation of its word processing software for OS/2 2.1 by no later than the first week of next month.

A full 32-bit implementation of WordPerfect on OS/2 is due in 1994, said Richard Running, WordPerfect's director of marketing for OS/2.

Although the 16-bit implementation is essentially only a port of WordPerfect's existing 5.2 release for Windows, some users said they are pleased that a major word processing package will soon be available for OS/2.

Excitement brewing

"A lot of people who are going to OS/2 are going to be excited about this," said Susan Littlepage, senior information resource center consultant at Huntington National Bank, a unit of Bancshares, Inc. in Columbus, Ohio. "We've been in correspondence with WordPerfect about it for the past year."

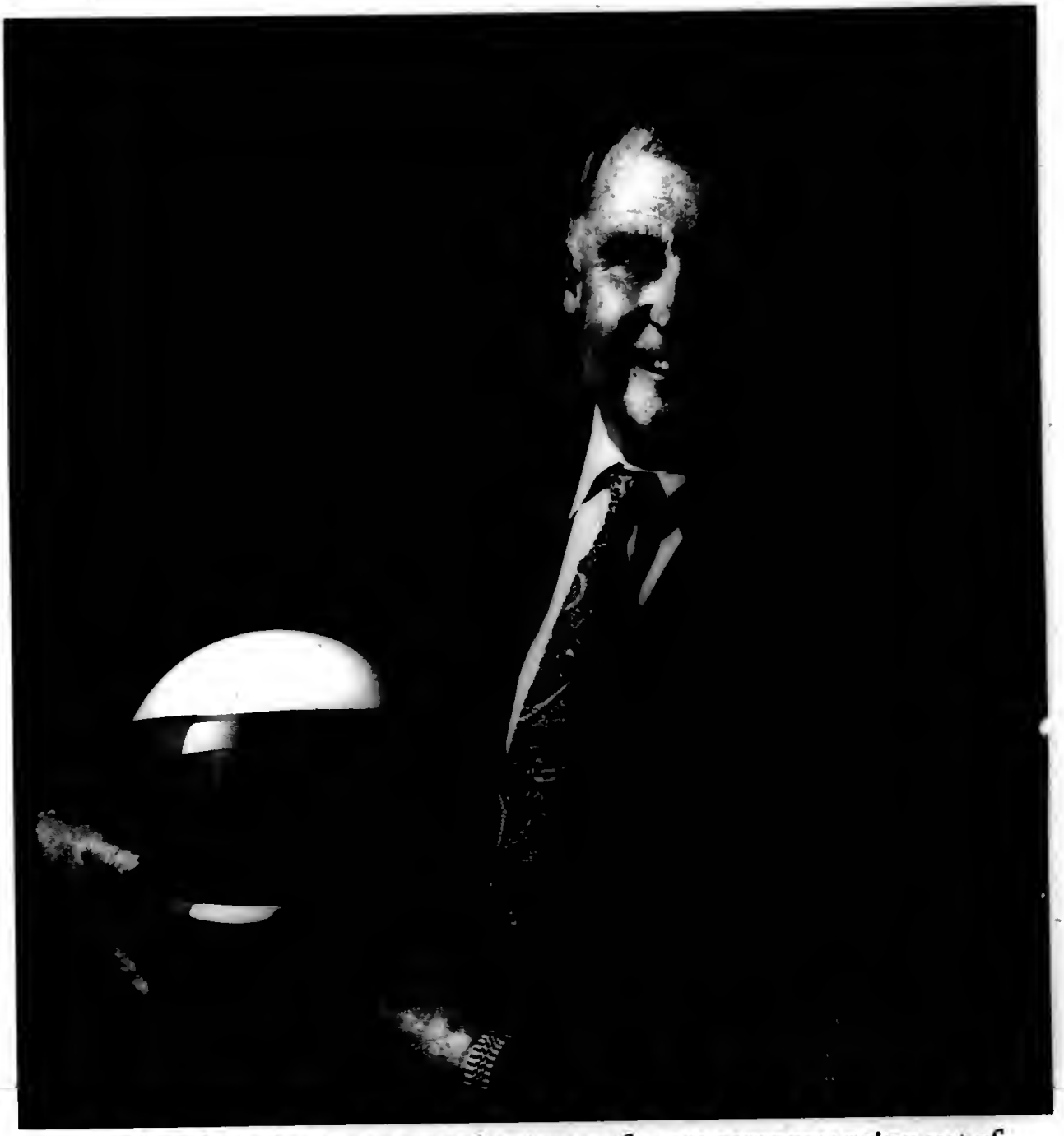
WordPerfect on OS/2 is important because the bank already uses WordPerfect under Windows and DOS, which means being able to transparently exchange files across multiple desktops is critical, Littlepage said.

WordPerfect extensions that take advantage of OS/2 include support for 32-bit multithreading and the ability to use IBM's WorkPlace Shell Utility to manage documents.

"Multithreading gives you the perception of speed because you can do a print job in the background while giving the user control over their screen," Running said.

In addition, WordPerfect has taken advantage of the drag-and-drop capabilities of the WorkPlace Shell to allow users to print documents or insert documents into other files without having to launch WordPerfect.

WordPerfect's major rival in the OS/2 arena is Describe, Inc. in Sacramento, Calif., which claims to market the only word processor specifically designed for OS/2.



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As OS/2 2.1 ships, questions remain

By Christopher Lindquist

"Opportunity only knocks once" is a phrase IBM hopes to prove wrong with Version 2.1 of OS/2, which officially shipped last week. But analysts, users and software vendors said IBM has some work to do to maintain the momentum that enabled it to ship some 2 million copies of OS/2 2.0.

Despite the positive technical reviews OS/2 2.0 received, some independent software vendors, resellers and users said IBM needs to update its strategy if it is going to sell OS/2 2.1 to non-OS/2 users.

In particular, a number of vendors recently complained that their OS/2 applications are not selling well. Indeed, Corel Systems Corp. and Micrografx, Inc. both said they are re-evaluating their commitment to OS/2 in light of less-than-stellar sales.

On the user side, sources close to OS/2 customer Ashland Oil in Lexington, Ky., said the Fortune 50 company is beginning to make a shift from OS/2 to Windows. Lithonia Lighting Corp. in Conyers, Ga., is converting some users back to older OS/2 versions after experiencing system hang-ups [CW, May 31].

Among the changes in IBM strategy suggested by members of the OS/2 community were improved and more visible marketing, more big-name applications and better service and support.

"IBM's strategy is different than Microsoft's," said Rich Running, director of marketing for WordPerfect Corp.'s WordPerfect for OS/2. "Right now, Microsoft is winning."

Not enough

Running said that while IBM's efforts have improved — technical support for independent software vendors is better, and there are more on-site technical representatives — more could be done.

Specifically, he said, IBM should refocus its campaign for OS/2 away from the "it runs Windows 3.1 applications" theme and toward the benefits of OS/2-specific features, such as the WorkPlace Shell. It is "difficult for [customers] to cost-justify [OS/2] to run Windows applications," Running said, because they "have to train users on both the Windows and OS/2 interfaces." IBM touts its WorkPlace Shell as being easier to use than Windows because it eliminates menu structures and focuses on an object-oriented approach.

Customers had their own short list of strategy suggestions (see story page 45). A user at a large chemical company said he had investigated OS/2 for a project but decided against it when he found development tool costs to be several times higher than they are for Windows. In addition, IBM support people proved to be difficult to reach. The same user noted that IBM's inability to get OS/2 applications on the market also hurt its chances.

But users and analysts generally agreed that if OS/2 has a weakness, it is in marketing — not technology. If OS/2 fails, sources said, it could likely be from a lack of exposure.

IBM's answers

Walter Casey, IBM's director of marketing, responds to suggestions about how to win users over to OS/2 2.1

SUGGESTION	RESPONSE
Present a more coherent message to customers regarding OS/2's future	
Improve initial support and service to help prospective users "get over the hump" while evaluating OS/2	
Create incentives for independent software vendors to produce OS/2 applications and price them competitively with Windows products.	

Play up exposure

Amy Wohl, president of Wohl Associates in Bala Cynwyd, Pa., said IBM needs to put a spotlight on OS/2 and OS/2 applications.

"You can't find OS/2 software in the stores to save your soul," she said. "Windows software occupies every available inch of space." And that lack, she said, is something IBM could remedy by working more closely with resellers.

Meanwhile, others have said IBM should continue to concentrate on selling OS/2 close to home. "I think IBM can push millions of copies of anything within its installed base," said Rikki Kirzner, principal analyst at Dataquest, Inc. in San Jose, Calif. "There's enough of a market within IBM that [independent software vendors] can sell to it and still recover their costs."

But what it all boils down to is that IBM must create sales for OS/2 applications outside of its installed base if it wants to succeed. Pragmatism rules in the computer industry.

"We're fond of IBM and fond of OS/2," said Peter McLaughlin, director of corporate communications at Micrografx, an early OS/2 developer and an IBM OS/2 development partner. "All that goodwill and faith and pleasantries aside, if the sales aren't there, there's not much anyone can do about it."

IBM reveals LAN Server plans

By Michele Dostert
AUSTIN, TEXAS

■ No believer is more fervent than a recent convert, and at a press briefing here last week, IBM local-area networking development executives trumpeted their new open systems religion. They touted detailed plans for future multivendor support in LAN Server as proof of their sincerity.

The latest release of LAN Server, Version 3.0, lacks the global distributed directory found in competing operating systems such as Novell, Inc.'s NetWare 4.0 and Banyan Systems, Inc.'s Vines. IBM will rectify that in the next major release of LAN Server by adding directory, file and security services, as well as the remote procedure technology that forms the Open Software Foundation's Distributed Computing Environment.

IBM plans to add native support for protocols other than NetBIOS. In the next major release, users can install LAN Server on top of a new transport package, called the Multiprotocol Transport Network (MPTN), which can then run Novell's IPX/SPX, Transmission Control Protocol/Internet Protocol, NetBIOS, LU6.2 or Systems Network Architecture.

"We know that many users in multivendor environments want to use just one protocol on their wire, which MPTN will let them do," said Charles Brown, the lead technical developer in IBM's LAN systems group.

Although IBM officials would not give dates for upcoming releases, they said planned LAN Server enhancements will appear "shortly after" those capabilities are added to OS/2.

Analysts applauded IBM's new openness but they said it may have come too late for IBM. "You have to give IBM credit. They have a good plan, and the DCE stuff will be great, although difficult to do," said Jaimie Lewis, a LAN analyst at Burton Group in Salt Lake City.

Windows NT passes test for colleges' financial aid

By Christopher Lindquist
BOSTON

When it came time to decide on a new student loan administration system, developers at The Education Resources Institute decided to bypass mainframes and minicomputers and go right to file servers.

And as if that would not cause most developers to blanch, they jumped a yard farther and decided to build the new system around an operating system that has yet to be released: Microsoft Corp.'s Windows NT.

The system, called ASAP, was the brainchild of four Boston companies — The Education Resources Institute, American Student Assistance Corp., New England Loan Marketing Corp. and Education Loan Services, Inc. It will provide financial aid for college students around the country.

The idea was to create a "traffic cop" that would direct inquiries about financial aid from educational institutions to any of 10 systems that reside on an IBM Enterprise System/9000, an IBM Application System/400 and a Digital Equipment Corp. VAX. The advantages over the old manual method are expected to be enormous, according to Ernest T. Freeman, president of The Education Resources Institute.

"One or two systems might have been available on-line, but if you made a change, it only affected that system," he said. "And one system might require a piece of paper to change, while the other might have a terminal."

Help on campus

Barbara Tornow, director of financial assistance at Boston University, said the school is very excited about the new system, which it has alpha tested and is about to start beta-testing.

She said the university processes some 20,000 loan applications per year that account for some $100 million in revenue for the school. And "when you cost $24,000 per year, people want answers; they want help," she said.

Tornow said there will be several benefits to ASAP. One of the most important will be getting information to students and families when they need it, not just when outside loan offices are open.

Many companies are building client/server systems on top of available operating systems, so moving to Windows NT was a risk. Freeman said the decision to go with Windows NT was based on several factors.

First, the companies involved felt they had the luxury to experiment with a new system because Microsoft guaranteed them a fallback position to Windows 3.1. They also believed working with Windows NT would position them well for the future of 32-bit operating environments, including using new 32-bit applications and scaling the system to other processors.

Currently there are seven schools beta-testing the system, but that number could jump to the thousands after the system becomes fully operational in the fall. The number of students affected could be in the millions, Freeman said.

Working with a beta-test operating system is not without its problems, however. For example, the original beta-test code did not meet performance promises Microsoft had made, and performance is vital to a system that may eventually handle millions of transactions.

ANNOUNCING A MAJOR STEP FORWARD IN ENTERPRISE-WIDE COMPUTING.

THE RIGHTSIZING CHALLENGE

In theory exploiting the economies of networked PC's while continuing to extract value from older larger systems is relatively straightforward.
In practice it is not. For a start, no single vendor can provide the optimal integrated software solution for managing information from the mainframe to the desktop. While distributed computing makes data readily accessible, it also accelerates the movement of data around the enterprise magnifying the level of complexity. And when a problem arises, figuring out which vendor to call can be a nightmare.

MAKING IT EASIER TODAY

Novell and Oracle own 65% of the networking software market and 48% of the database market respectively. With our software we span the enterprise as no other company, or combination of companies, can. For years, we have worked to ensure our products are compatible. Now we have completely integrated our leadership products and added new workgroup communication software to provide a single enterprise-wide information management solution : OracleWare.
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News Shorts

Apple names Spindler CEO, cuts tags

Apple Computer, Inc. last week promoted President Michael Spindler to chief executive officer. He succeeds John Sculley, who remains chairman and will focus on emerging business opportunities. The firm also cut prices on many Macintosh models by as much as 12%. The largest cut was a $410 reduction on two models of the PowerBook 180. Apple also cut prices by as much as 26% on peripherals such as CD-ROM drives and laser printers and instituted a three-month rebate program on some hardware for dealers.

Turner IS exec switches niches

Construction giant Turner Corp. confirmed last week that Richard A. Schell, its director of information systems for the past 10 years, will move to Capital Cities/ABC, Inc. Schell led IS at Turner when it went through a major move in the 1980s from a host-based computer to a client/server setup. Schell refused to comment on his possible assignment at ABC. He moves over on June 28. An ABC spokeswoman, meanwhile, would confirm only that the network was "in negotiations" with Schell.

Open systems management moves

Last week was chock-full of Unix systems management news. A user group called Moses (Massive Open Systems Environment Standard) said it has published a document, available through CompuServe and other means, that identifies the requirements for managing a large data center of Unix machines. Also, Hewlett-Packard Co. has tapped EcoSystems Software, Inc. in Cupertino, Calif., to provide EcoTools client/server systems management software to HP/UX customers. HP already has a similar agreement with Computer Associates International, Inc.

Newspaper tries downsizing

Philadelphia Newspapers, Inc., which publishes the *Philadelphia Inquirer* and the *Philadelphia Daily News*, last week said it will abandon its IBM 3090-based Dun & Bradstreet Software financial programs in favor of a Collier Jackson application running on a Hewlett-Packard HP 3000 minicomputer.

JC Penney to get high-speed network

JC Penney Co. has tapped AT&T to construct a multimillion-dollar, high-speed digital network to link the retailer's 1,300 stores with three data centers. The network is the first phase of a five-year plan to implement a client/server and bridge-router architecture corporatewide, a spokesman said. AT&T Digital Access Cross-Connect switches support a 45M-bit/sec. backbone between three primary data centers around the country and deliver 56K bit/sec. digital links to all 1,300 retail outlets. The network replaces AT&T 9.6K bit/sec. multidrop analog lines. The network project is scheduled for completion by October.

IBM boosts AD/Cycle

To pump new life into its sagging AD/Cycle software development program, IBM Programming Systems announced plans to incorporate Seer Technologies, Inc.'s communications connectivity code in future computer-aided software engineering products, including LAN-based packages that IBM will ship by mid-1994. IBM has a 40% stake in Seer in Cary, N.C.

SHORT TAKES Fujitsu Ltd. and Siemens AG will jointly develop a family of mainframes that will be less expensive than today's versions; the wares should be ready in 1996.... Novell, Inc. has completed its acquisition of Unix System Laboratories, Inc.

News shorts, *page 16*

Investigation stalls TVA project

By Kim S. Nash
KNOXVILLE, TENN

Officials at the Tennessee Valley Authority (TVA) acknowledged last week that the organization has halted a client/server migration to PeopleSoft, Inc. payroll applications, pending the outcome of an investigation by the TVA Inspector General's Office.

At issue is the validity of the software procurement process and how well PS/Payroll works with IBM DB2 data and applications. TVA's difficulties with PS/Payroll appear to be an exception: Of eight other PeopleSoft users interviewed, none reported problems serious enough to stop work.

George Prosser, assistant inspector general, confirmed that his office is investigating problems with PS/Payroll but declined to elaborate. Other sources at and close to TVA said it is in the heat of a formal investigation of allegations of wrongdoing on the part of a TVA employee in procuring PeopleSoft software. Prosser gave no time frame for completion of the investigation.

Technologically, the payroll initiative has seen troubles, too: There have been difficulties in getting PeopleSoft programs to work as promised with TVA's existing mainframe-based payroll system, sources said.

TVA Chief Information Officer Bob Yates said he could not give specifics per an agreement with PeopleSoft, but he did confirm that the payroll project is on hold.

Meanwhile, TVA brought in several client/server applications in March from Oracle Corp., including payroll.

Yates noted that TVA is a longtime Oracle customer, having signed a five-year contract with the vendor in 1990 that gives TVA "rights to license Oracle's entire product line," he said. He declined to say whether Oracle will replace PeopleSoft at TVA.

PeopleSoft executives declined to be interviewed but submitted a prepared statement to *Computerworld* that conceded "difficulties" with the TVA payroll project: "To the extent that PeopleSoft customers have experienced any implementation difficulties in connection with either the installation of or conversion to client/server technology, PeopleSoft has sought to work cooperatively with them to work through and resolve these difficulties. This commitment applies to all of PeopleSoft's customers, including TVA's Payroll implementation team," wrote Peggy Taylor, vice president of customer services.

TVA was among early client/server enthusiasts in 1990 when it shelled out — up front — more than $1 million for a suite of PeopleSoft applications. The organization planned to downsize an IBM mainframe-based employee payroll and benefits application to a client/server system. That means the PeopleSoft applications had to accommodate large, on-line transaction processing using DB2 as a host.

The problems appear to be confined to payroll. For example, a PeopleSoft human resources project "came off well," said Ray Pack, information systems program manager for human resources. Human resources went live in November 1992 with a distributed system for 250 employees in several TVA offices in four states.

Pack led the two-year effort, which involved converting 1.1 million records on a flat-file database to DB2 connected to 40 local- and wide-area networks of mainly IBM Personal System/2 PCs.

Oracle, Novell team up to offer suite alternatives

By Kim S. Nash
SAN FRANCISCO

Oracle Corp. and Novell, Inc. last week unveiled OracleWare, a line of repackaged products from both vendors, the first of which is due out by September.

OracleWare — to be sold by Novell resellers but supported by Oracle — consists of the Oracle 7 database, either the NetWare or UnixWare operating system and Oracle Office, a suite of electronic-mail and scheduling tools for building distributed office applications. OracleWare users need only call Oracle for support, regardless of whether problems lie in the database or operating system.

The two companies stressed that their alliance is aimed at serving entire enterprises, but users and analysts said they see it more as a parry to a workgroup-level thrust from Microsoft Corp. and Sybase, Inc.

Observers said they were more interested in one-stop support than in OracleWare, especially because the package will not be priced at much of a discount vs. buying the pieces separately.

"The biggest benefit for users is no finger-pointing on support anymore," said Rob Tholemeier, an analyst at Meta Group, Inc. in Burlingame, Calif.

Officials at Oracle and Novell declined to specify pricing but said it will be user-based, starting with small workgroup scenarios and ranging to enterprise-level packages.

The database market will undergo a price restructuring as distributed computing takes hold, said Wayne Kernochan, an analyst at Aberdeen Group in Boston.

Users are likely to see dual offerings with different prices and features from each vendor: a lower end workgroup level and a larger, enterprise-class package, he predicted.

The partnership is nonexclusive, but Novell Chief Executive Officer Ray Noorda said his firm will devote "serious" time and resources to making the deal work, precluding similar agreements with other database makers for now. "This will take time.... We will not go out carte blanche and look at other vendors," he said.

Oracle on UnixWare piqued the curiosity of a few Oracle users, including Mike Oelkers, a computer scientist at University of California Lawrence Livermore National Laboratory in Livermore, Calif. He is planning a mass consolidation to Oracle databases running on Unix systems.

Running UnixWare on the 350 PCs in one of the departments he oversees would make that conversion a lot easier.

"We'd be able to use the existing PC hardware, which is inexpensive compared to putting everyone on Unix workstations," Oelkers said.

As for Oracle Office, observers said they were skeptical of a mass conversion to the product. Most NetWare users already run "more graphical" administrative packages from Microsoft and Lotus Development Corp., Tholemeier noted.

OracleWare abouts

A calendar of scheduled ship dates

SEPTEMBER 1993
- Oracle 7 NLM for NetWare 3.X
- Oracle 7 for UnixWare

FIRST-QUARTER 1994
- Oracle 7 NLM for NetWare 4.0

MID-1994
- Oracle 7 for UnixWare symmetric multiprocessing systems

Sun division to play up integration

By Elisabeth Horwitt
CHELMSFORD, MASS

Sun Microsystems, Inc. is expected this week to launch a new division mandated to help customers integrate their Sun systems into multivendor, enterprise-wide computing environments, a source close to the company said.

Based here, the new organization will consist of teams of Sun engineers who specialize in network design and implementation and will target customers around the world, the source said.

This should have a strong appeal for Sun customers who want to build global enterprise networks, said Todd Dagres, a senior analyst at The Yankee Group. Indeed, such a unit would fill a long-standing gap in Sun's support organization. "Sun has always been one to say to a customer, 'You have to be smart or buy from an integrator,'" Dagres said.

"Sun runs a very lean, mean and clean" support organization, agreed Roy Camblin, a senior vice president at Wells Fargo & Co.

Indeed, Sun will probably be handing fewer network integration customers to its partners, Electronic Data Systems Corp. and Andersen Consulting, said Walter Johnson, director of advanced network computing services at New Science Associates, Inc., a consulting company based in Westport, Conn.

Growth spurt

The worldwide network integration and management services market is expected to grow 32% per year through 1996, from $14.5 billion in 1993, according to G2 Research, Inc. in Mountain View, Calif.

"I guess Sun wants to keep some of those integration profits for itself," Johnson said.

The question is whether Sun can compete with its former partners for customers who "want their hands held through the process of moving from the mainframe down to distributed computing," Johnson said. "At the technical level, I'm sure Sun could convince engineers that it knows how to string boxes together. The question is whether Sun can convince IS managers [who] want a partner who understands their business."

Wells Fargo, for example, could use some help integrating two divisions of the bank. One uses Intel Corp. workstations and Novell, Inc. networks, and the other uses Sun and Oracle Corp. technology, Camblin said.

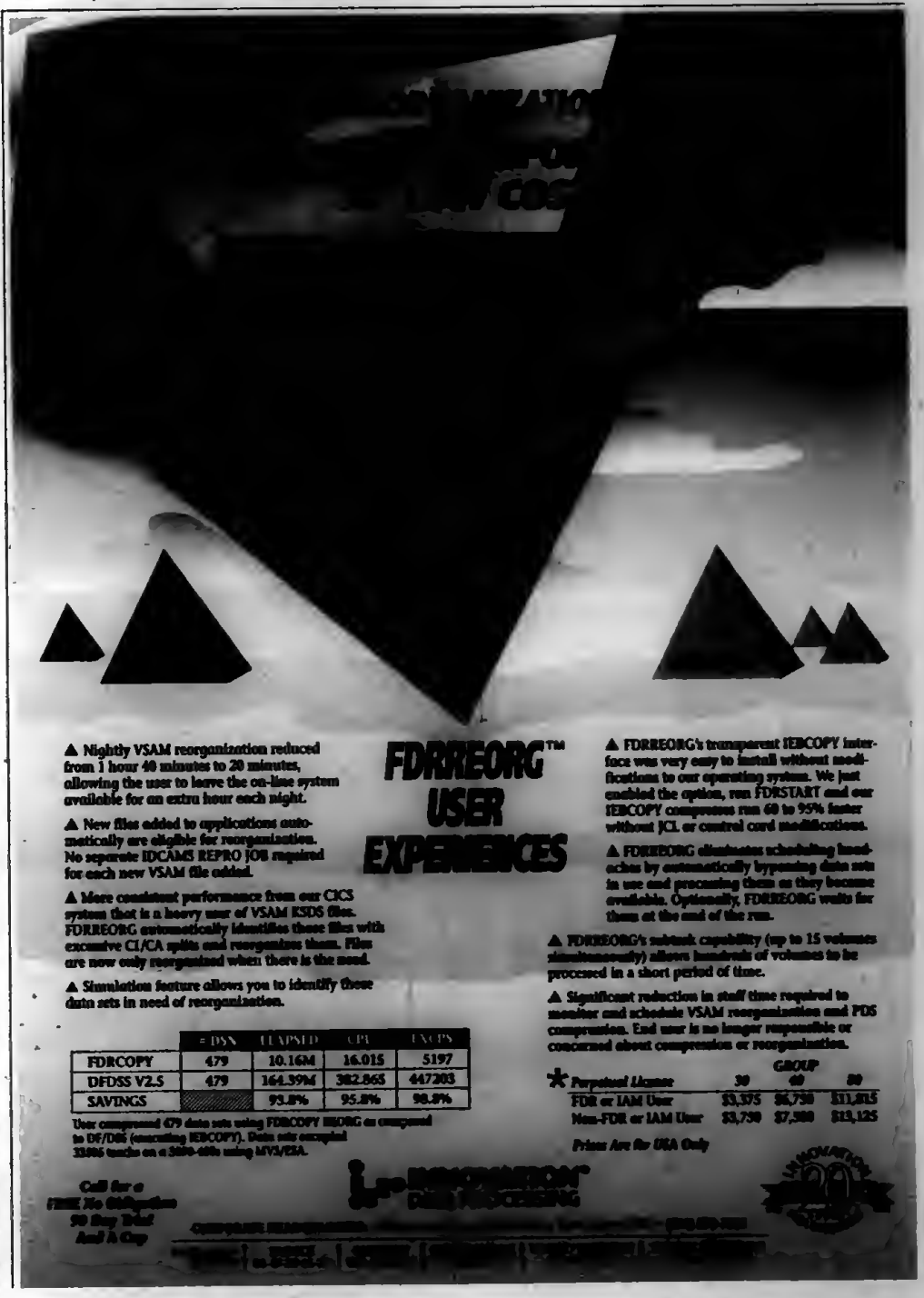
However, the bank is more likely to look for integration help from "a major consultancy specializing in linking different platforms, such as Oracle's consulting group or SHL Systemhouse Ltd., Camblin said. "I almost don't want to depend on my hardware vendor for integration because then you don't get to pick and choose the best and the cheapest."

On the other hand, users cannot help but benefit from Sun's allying with other vendors for integration purposes, Camblin said. He cited as an example the recent Common Open Systems Environment, a Unix consortium that Sun has joined.

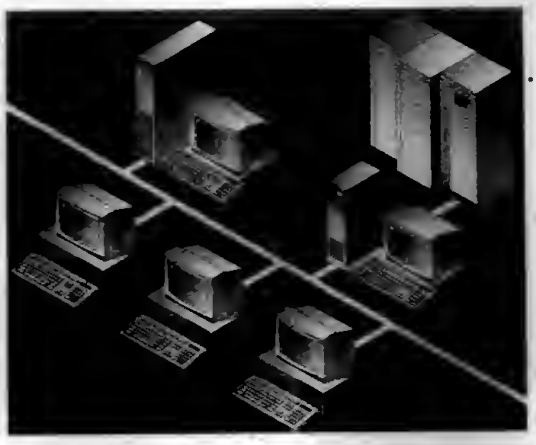
Sun will be following in the footsteps of IBM, Digital Equipment Corp. and Hewlett-Packard Co., whose systems integration consulting organizations have made billions, said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C., consulting firm.

Sun's new organization is expected to make use of existing network integration products and services that other Sun divisions now provide. In particular, its staff is expected to work closely with SunSelect, a Sun division also based in Chelmsford. SunSelect provides services and products to integrate Sun and other types of Unix systems with a variety of PC clients and local-area networks.

Sun is also expected to expand its network integration offerings through alliances with other vendors, which will be announced at a future date. Further details about the new division's offerings should come out in the fall, according to the company.



There's a lot of serious rethinking going on in the area of information management. Because companies need to take advantage of new technology while keeping the best of their existing systems. They need to go to client-server computing. Without moving out of the mainstream.



Above: Windows NT delivers power, reliability and open architecture for client-server computing.

Right: This versatile operating system platform includes versions for both clients and servers.

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Mainframe data access getting easier

New tools, packages open up legacy systems

By Johanna Ambrosio
BOSTON

Until recently, users have had neither key nor keyhole into most nonrelational mainframe data. But accessing legacy data is becoming easier, thanks in part to new tools and packages announced last week by vendors.

The announcements, which took place at the Database World trade show, included the following:

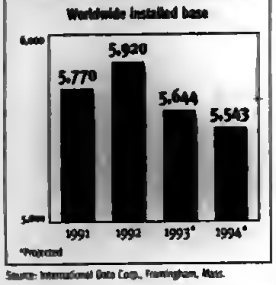
- Trinzic Corp. in Waltham, Mass., and Micro Decisionware, Inc. in Boulder, Colo., said they will jointly market each other's software to provide workstations with access to relational and nonrelational mainframe data.

The vendors will pitch Micro Decisionware's Database Gateway as the transport mechanism and Trinzic's InfoHub as the way to access mainframe data from VSAM files, IBM's IMS databases and Computer Associates International, Inc.'s Datacom and CA-IDMS data.

- Information Builders, Inc. in New York announced 13 gateways to provide point-to-point bridges to VSAM, IMS, CA-IDMS, Cincom Systems, Inc.'s Total and others.
- In addition, IBM managers said they will unveil during the next few months a strategy dubbed "Open IMS." This will comprise a family of packages that will let end users access IMS data from PCs and workstations running Windows, flavors of Unix and other environments.

Over the Hump

IBM hopes Open IMS reverses the decline of IMS, which is expected to begin this year



Source: International Data Corp., Framingham, Mass.

By some estimates, 70% to 90% of mainframe data resides in flat files or nonrelational databases. "There's still pre-1965 stuff out there, chugging along happily," said Ken Orr, a database consultant and principal at the Ken Orr Institute in Topeka, Kan.

The idea of opening up flat files and other data created before the advent of relational databases comes at a time when end users are pounding on information systems shops for data access.

"Access is getting hotter all the time," said Chris Levan, IS vice president at Blue Cross/Blue Shield of Tennessee in Chattanooga.

"Legacy data is a very big problem," said Donnette Bruno, an information resource management specialist at Barnett Bank in Jacksonville, Fla. "You're trying to apply new technology to old stuff, and that just doesn't work too well."

Although IS shops have made the switch to relational for their new applications, the majority of production systems still run on the older databases. Most IS shops cannot afford to convert the old applications to another format.

Thus, IMS and its ilk will probably be around another 10 years or more, said Shaku Atre, president of consulting firm Atre Associates, Inc. in Rye, N.Y.

There have, however, been few tools available to automate the providing of old data to end users because the access tools on the market are almost entirely geared to relational databases. And even some of what has been available allows for retrieval but not updates or deletions to the vintage systems.

Mostly, IS shops have had to adopt one of three techniques: write their own programs to provide the data, duplicate the data or a subset of it in relational databases or not provide the data at all.

Also, some mainframe database vendors, including IBM, Cincom and Software AG of North America, Inc., have programs to move data from hierarchical databases to relational ones.

IMS not forgotten

IBM's IMS hierarchical database may be forgotten, but it is far from dead in IBM's development ranks. In the next several months, IBM will roll out packages that will allow PC users to access IMS.

"We'll be providing multiple bridges to access IMS data," said Patt Cronin, IBM's IMS product manager. Version 4.1 "set the stage for client/server," she said. IMS Client Server/2 [CS/2], available Friday, allows OS/2 users to access IMS.

IBM will build up this CS/2 family to run under other platforms, including Windows and Unix.

Shaku Atre, president of Atre Associates, said, "IBM has seen that IMS still has life left, and they want to jump on the client/server bandwagon along with everyone else."

Customers applauded the move. "We want to tie legacy data together with information from non-IBM platforms," said Steve Clanton, an applications support analyst at Caterpillar, Inc. in East Peoria, Ill.

IBM is working with third-party providers to provide IMS access, Cronin said.

— Johanna Ambrosio

Mobile computing

CONTINUED FROM COVER 1

ADP's Audapoint system, which is now rolling out at a rate of about 50 systems per week and will soon glean benefits from pen technology, is a "smart" estimating machine. Using detailed text and graphical database information, it calculates vehicle repair costs in moments.

The system is fostering a truce between insurance companies and auto repair shops, which, to the detriment of customers, have historically haggled for days over labor costs, explained Gerhard Blendstrup, senior vice president of strategic services at ADP's Automotive Claims Service office.

A portable version of a 1G-byte graphical database for adjusters and a desktop version for repair shops gives both sides of the claims equation the same information on labor and part costs for every vehicle on the road. This promotes trust between once-adversarial players and accelerates service, Blendstrup said.

Claims adjusters tote their systems around in suitcases that house the static portions of the detailed database and two CD-ROMs in a portable PC. A modem in the case allows adjusters to access mainframes in Ann Arbor, Mich., and to gather dynamic data. A miniprinter spits out repair estimates on-site.

Because many insurers refer to the ADP database "as the estimating Bible," quotes from repair shops and adjusters created through ADP are more widely accepted by each side, said Shon Kim, general manager of Obrist & Cunningham Body and Paint Specialists in Portland, Ore., a repair shop that uses the desktop Audapoint version, called Shoplink, for its estimating. "We're making more money because we're getting paid for actual work" instead of spending time negotiating, he said.

Fraud fighter

Continually refreshed data on the mainframe is fending off insurance fraud by giving adjusters real-time information on stolen or damaged cars when an owner is trying to milk multiple insurance firms for a single claim.

When an insurer trusts a shop's estimate and waives an on-site inspection, "we can save three days on a 10-day job," added Erick Bickett, director of information technology at Caliber Collision Centers, a nationwide repair shop chain based in Fountain Valley, Calif.

The estimates are accurate because the system will deduct labor time and associated costs for overlapping functions, such as a common piece of work to be done if both the hood and fender are to be refinished, Kim explained. Or it will add time and costs to an estimate if "you need to replace a fender but have to pull the bumper off to get to it," he said.

The goal behind adding a pen-based version, now in prototype, is to let claims adjusters from ADP insurance company clients point to a damaged car part on their screen and immediately get the breadth of parts and labor information they need to turn around an estimate on the spot.

Another touch of the penpoint allows users to drill down, layer by layer, into the innards of today's complex motor vehicles; as they do, the system dynamically adjusts prices as it judges relationships among damaged parts.

Pen technology is applicable to the process, said Joe Pych, information systems team leader at Travelers, because the highest form of technology many appraisers have used is a calculator. The pen interface is more like the pencil and paper they are used to, Pych said.

But "wireless technology is the one thing stalling progress" with Audapoint, Blendstrup said. Some adjusters use the Ardis radio data network to communicate with the host, but wireless "just isn't there yet," he said (see story below).

Travelers tested Audapoint over Ardis during its pilot, Pych said, "and we were very disappointed with the range" of service and decided not to include it in its production system.

Static information, such as car design, OEM part numbers and prices, are refreshed on each user's mobile system monthly. Fluctuating information, such as the changing inventory of salvage yards, remains on the mainframe.

Wireless-less

Wireless links from portable PCs to ADP's home database system would be handy for Audapoint users crawling under cars and not in the mood to find a phone jack. Yet wireless technology is the biggest roadblock with Audapoint, said Gerhard Blendstrup at ADP's Automotive Claims Service.

The reasons are as follows:

- No wireless network service today has 100% coverage, which limits use.
- Some Audapoint users employing the Ardis wireless network are finding response times slow because real-time data is "not store-and-forward-oriented," as are wireless services.

Emerging competitive wireless offerings are causing a holdup while ADP evaluates them. "We'll probably end up gluing some cross-section of them together into a common backbone," Blendstrup said.

Industry progress with this began last week. RadioMail Corp. announced a gateway between the Ardis and RAM Mobile Data networks at the Electronic Mail Association show in Atlanta (see story cover 1).

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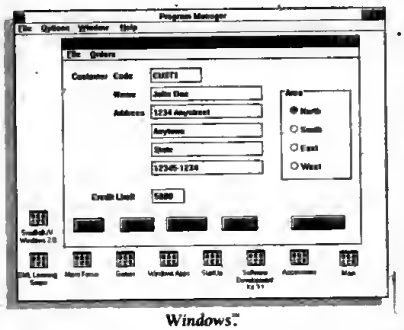

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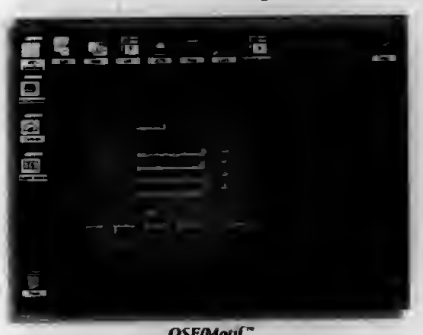

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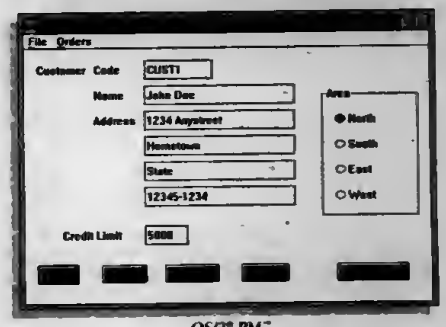

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GSA Contract Number GS00K90AGS5251-PS02

Winners and finalists at Computerworld's second annual object-oriented application awards competition gathered with master of ceremonies Steve Jobs and Computerworld Publisher Gary Beach last week to celebrate. Pictured (top) Al Christians, Jim Burton, Will Thornton-Reid, James R. Greenwood, Craig L. Patterson, Ken Matusow; (middle) unidentified, Werner Staringer, unidentified, Amarjeet S. Garewal, C. Douglas Colonel, Barbara Harper, Gregory H. Anderson; (front) Robert Seliger, Howard Sumner, Gary Beach, Steve Jobs, Christopher Stone, Bernadette Reiter, Rich Holmes and Leo Savage.

Allies abound at Object World

Object-oriented cooperation the theme for many vendors

By Melinda-Carol Ballou
SAN FRANCISCO

Alliances were all the rage at the Object World object-oriented conference last week, amid the usual flurry of new product announcements, user testimonials and industry hype.

A wedding cake served by Interactive Data Environments Corp. and Martin Marietta's Advanced Concepts Center to symbolize their collaboration on new object management products seemed an apt image for many vendors in attendance. These included large systems manufacturers such as IBM, Hewlett-Packard Co. and Digital Equipment Corp. and software companies such as Borland International, Inc. and Lucid, Inc.

Brokering key agreements was the Object Management Group (OMG), which is coordinating the establishment of object-oriented standards. The organization also helped sponsor the conference.

Presence felt

Conspicuously absent from the festivities were the folks from Redmond, Wash.-based Microsoft Corp., which did not have a booth at the show. But the company was present implicitly — its competitive threat offered the incentive to overcome disagreements and unite.

As expected, IBM and HP, together with SunSoft, Inc., the software subsidiary of Sun Microsystems, Inc., announced that they would offer common interfaces to the OMG's Common Object Request Broker Architecture (Corba) standard (see story at right). HP and IBM further declared their intent to share technology and interoperate across their technologies.

Borland and Digitalk, Inc. also announced support for IBM's Systems Object Management technology. Following its recent agreement with HP [CW, May 31], Next, Inc. gave DEC the go-ahead to resell the NextStep operating system and tools on selected PC platforms.

Seventeen vendors displayed products related to the OMG's Corba, such as developers' kits, implementations of the Corba specification and related interfaces. Object Design, Inc. and Objectivity, Inc., for instance, demonstrated their object databases with support for Corba. Objectivity is working with SunSoft to build an extension that will enable Corba's Object Request Broker to pass object requests directly to the database.

"Corba provides an infrastructure for interoperability in much the same way that the telephone system does," said Jeffrey Fleisher, senior scientist at the National Photographic Interpretation Center, a McLean, Va.-based federal research agency that has been using the OMG standard for development. "Ultimately, I expect that these services will be pushed down into the operating system."

Address immediate needs first

While users said standards such as the OMG's and others will ultimately help them, most at the show focused their attention on their direct development needs.

Standards "will make the job easier in the long run, but I can't get bungup in all of it," said Bill Wallace, manager of technology planning at Florida Power and Light in Miami. He added that his organization partners with strategic vendors as a cushion against the vagaries of the standards process. Standard interoperability across Corba will not be available until next year, for instance.

According to Cliff Reeves, manager of object technology products at IBM's Personal Software Products Division, the new alliances and standards bode well.

"Breaking the application development logjam with object-oriented technologies has been a dream for many years. . . . But even ANSI-compliant C++ compilers haven't been able to work together," Reeves said. "Corba provides a nervous system for objects."

DEC offers multiplatform distribution link for OLE

By Melinda-Carol Ballou
SAN FRANCISCO

Digital Equipment Corp. will provide a key link for Microsoft Corp.'s Object Linking and Embedding (OLE) protocol later this year when it ships technology said to enable users to distribute OLE applications across a range of platforms.

OLE so far has been limited to Windows, and there is also some doubt about Microsoft's willingness to support emerging object-oriented interoperability standards from the Object Management Group (OMG) [CW, June 14].

DEC's upcoming technology, which will likely ship to beta-test users with a developer's tool kit and a new version of DEC's Application Control Architecture (ACA) services in September, addresses both of those issues. It will allow OLE applications to use the OMG's Common Object Request Broker Architecture (Corba) as a transport mechanism to communicate with non-OLE and OLE-compliant applications running on a range of platforms.

Industry analysts and OMG officials lauded the technology.

"This is important because it adds distribution [capabilities] to OLE, which won't be available from Microsoft until Cairo ships, and who knows when that will be?" said John Rymer, an analyst at the Patricia Seybold Office Computing Group, a consulting firm located in Boston.

Tool translator

DEC's Software Developer's Kit, created jointly with Open Environment Corp., a Cambridge, Mass., developer, will offer Corba translation capabilities for OLE, Dynamic Data Exchange and Microsoft's Visual Basic programming tools.

The software developer's kit will ship to software developers next month. It will go into general beta testing in the fall and will be generally available before the end of the year, DEC officials said.

Current pricing for ACA offers a "good guideline" for the projected cost of the ACA software developer's kit, officials said. An average developer's license on a "good-size server" costs $5,000, and a runtime license on a PC is priced at $130.

SunSoft's objects tool kit enters beta-testing phase

By Jean S. Bozman
SAN FRANCISCO

■ Only weeks before IBM and Digital Equipment Corp. plan to ship their distributed object tool kits, Sun Microsystems, Inc. subsidiary SunSoft, Inc. jumped on the interoperability bandwagon at last week's Object World show. SunSoft announced plans to ship a developer's version of its long-awaited Project DOE (Distributed Objects Everywhere) tool kit.

Sun is unlikely to beat either of its rivals out the door, however. A beta test lasting several months is planned, according to Sun executives, who noted that general availability might not come until 1994.

Project DOE is to be a launching point for a new generation of client/server networked applications running under Sun's Solaris operating environment. DOE was also designed to address aging mainframe applications. That can be done by "wrapping" old Cobol code in a new layer of objects that can be handled by a re-engineered set of corporate applications, said Bud Tribble, SunSoft's vice president of object products.

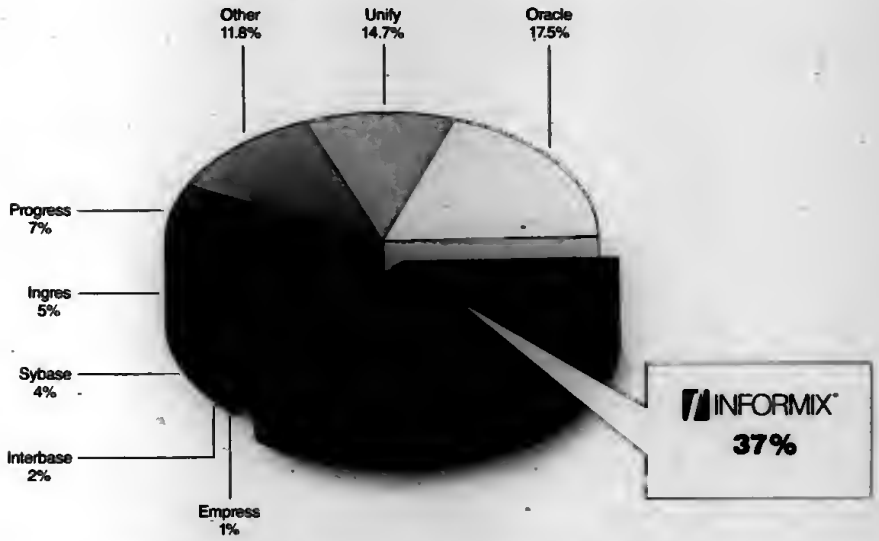
SunSoft also revealed an agreement with IBM and Hewlett-Packard Co. last week to ensure interoperability among Project DOE, IBM's System Object Model and HP's Distributed Object Management Facility [CW, June 14]. Without this interoperability, based on a set of common object interfaces, distributed object applications would not work in mixed-vendor networks.

Based on Corba

DOE is based on Sun's advanced research project and the Object Management Group's Common Object Request Broker Architecture standard, which was built on HP's object-oriented technology. DOE also contains a set of built-in object services for global naming, event notification and the assembly of compound objects into applications, said Jim Green, director of Project DOE.

The Project DOE developer's kit is being shipped to a small group of large Sun sites and consulting firms, Tribble said. Industry analysts said the number may be extremely small — about a dozen selected sites.

The UNIX Database Leader Now Does NetWare.



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Reporter's Notebook

The resounding theme at last week's Electronic Mail Association conference in Atlanta was how implementing LAN electronic mail will require companies to invest heavily in infrastructure. The cost of E-mail software is just the tip of the iceberg, conference speakers warned again and again.

To illustrate the complexity of implementing large-scale LAN E-mail, Durwin Sharp, E-mail adviser at Exxon, said the company expects to finish migrating 65,000 users from host to LAN mail during the next "15 to 20 years" but didn't stick a price tag on the mammoth project.

Lotus, meanwhile, announced CC:Mail for Windows 2.0, which adds features that will help users automate sorting, searching and storing E-mail messages. For instance, by picking from a list of commands, users can build rules to direct the handling of incoming mail. Other new features include a spell checker that uses a 190,000-word Houghton Mifflin Co. dictionary and an updated interface.

Banyan, Isocor and gateway vendor Boston Software Works will ship products in early 1994 to link X.400 and Simple Mail Transfer Protocol (SMTP) messaging with Banyan Vines message transport and StreetTalk directory services.

Reach Software will bundle imaging software from Watermark Software into its recently released work-flow software, which means the Reach software can now route faxes. Watermark announced a similar arrangement with Beyond this week as well. Meanwhile, CE Software said it will use Reach technology to run its Quickmail clients natively over Novell's Message Handling Service.

The U.S. House of Representatives is connecting internal departments' E-mail — opening itself to E-mail from the Internet public and other organizations — using software and hardware from Soft-Switch in Wayne, Pa., to link the disparate networks.

SHORT TAKES X.400 software showcased at the conference included several additions to Hewlett-Packard's OpenMail X.400 messaging line, including support for CC:Mail, Microsoft Mail, Macintosh and Sun clients and integration with HP's OpenView network management package.... DEC unveiled X.500-based directory integration software and announced that its X.400-based mail-integration suite runs on the VMS/VAX Version 1.0 platform.... Microsoft released an updated gateway from Microsoft Mail to X.400 that will work on Ethernet LANs via an OSI protocol.... Control Data in Arden Hills, Minn., demonstrated an E-mail switch and directory integration software. The software converts incoming mail from most major platforms to and from the SMTP X.400 and ties into directory services based on the X.500 standard.... Apple announced its latest version of its X.400 server software gateways that work over TCP/IP and OSI networks.

Wireless gaining ground

CONTINUED FROM COVER 1

Mobile Communications, Inc. with an announcement of a wireless modem that implements the "AT" (attention) command set interface developed by Hayes Microcomputer Products, Inc. and used in most wired modems.

The first commercial developers to use the modem are Lotus Development Corp. and AT&T, which demonstrated their respective CC:Mail LAN application and EasyLink wired messaging service over RAM Mobile Data's network (see story below).

In addition, Intel Corp. said it plans to release in September an end-to-end wireless service package that includes the Ericsson modem, the CC:Mail application and a RAM-to-Easylink connection.

Getting the hang of it

The fact that widely used CC:Mail is going wireless is important to familiarize users with wireless mail, and the new modems will make application development easier, said Roberta Wiggins, associate director of wireless and mobile communications at The Yankee Group in Boston. But many users said that even so, wireless technology is too immature to make firmwide implementations yet.

For example, Dawn Simon, manager of global messaging at Salomon Technology Services in New York, said she will not invest in wireless until she sees better network and data security.

"Currently, sending a wireless message is about as secure as sending one by paper airplane," she said.

The security fear exists, in part, because the messages are stored at the service provider's site, she said, leaving them only as protected as the carrier is able to make them.

Hard to carry around

For Christopher Lynberg, a computer specialist at the Centers for Disease Control and Prevention here, another roadblock is portability. With many vendors' systems, users must carry a separate, bulky wireless modem along with their laptop and other traveling paraphernalia.

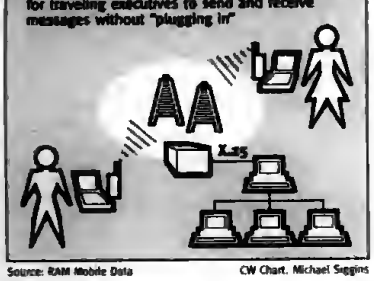
"I'm looking for one device that includes paging, two-way messaging and a cellular phone," Lynberg said.

That scenario is not viable for the near future; however, at least one vendor is addressing the portability problem. Motorola, Inc. demonstrated its wireless version of the latest laptop craze: a Personal Computer Memory Card International Association-standard modem.

The device should make wireless computing less cumbersome by integrating the credit-card-size interface into the PC. However, Motorola said it does not expect to deliver the product until 1994.

No physical connection

Progress in the wireless industry makes it easier for traveling executives to send and receive messages without "plugging in"



Source: RAM Mobile Data — CW Chart: Michael Siggins

Wireless messaging works both ways

The wireless world of two-way messaging forged ahead last week with the following developments:

- Support of the Hayes AT command set in Ericsson GE Mobile Communications' $775 radio modem, available now, allows software developers to write to a common interface for both wired and wireless applications and to adapt existing applications to wireless media.
- RAM Mobile Data announced gateway software that lets customers using the AT-compatible device connect to X.25 packet networks.
- Also on the interoperability front, RAM Mobile Data is beta-testing BellSouth Corp. software that provides wireless access to Digital Equipment Corp.'s All-In-1 mail. The software is available to companies for other pilot projects.
- RadioMail said that starting this week, users of Apple Computer, Inc.'s PowerBook and PowerBook Duo notebooks equipped with an Ericsson or Motorola wireless modem can exchange messages using RadioMail's wireless service.
- RadioMail also announced a wireless "breaking news" service free to its subscribers who use PowerBooks. Users can download headlines, news summaries and Dow Jones information that is downloaded from 16 newswires.

—Lynda Radosevich

Informix shipping gateway for host

By Kim S. Nash
MENLO PARK, CALIF.

Informix Software, Inc. is due to ship today a gateway between its database and IBM mainframes but will not fully support Application System/400 minicomputers, as was originally planned.

Informix-Gateway with DRDA was designed to let applications built with Informix tools access and change data stored on machines under IBM's Distributed Relational Database Architecture (DRDA).

DRDA is a set of standards said to let relational databases on IBM mainframes and AS/400s understand the SQL spoken by remote non-IBM systems.

However, Informix's internal tests showed that the "AS/400 didn't fully conform to DRDA in some instances," according to Mike Sun, product marketing manager for connectivity products.

IBM said it has fixed the problems, but Informix wants to run "a more robust battery of tests, just for our own peace of mind," Sun said.

Cause of bottlenecks

The problems were minor, but they nonetheless stymied the gateway in specific situations, Sun explained. For example, the gateway cannot map certain data formats between Informix's SE database and the AS/400's built-in relational database because the AS/400 operating system misinterprets some DRDA specifications, he said.

"The AS/400 completely complies with DRDA," said John Fulton, chief software engineer for the AS/400 database.

The as-yet unpriced gateway allows some conversation between AS/400 and Informix-built applications, but not as much as Informix would like. Sun said more testing is necessary before Informix can ship an AS/400 gateway, but he expects to announce one by the fourth quarter of 1993.

Meanwhile, a DB2 version is on its way out the door for Informix users running IBM RISC System/6000 and Sun Microsystems, Inc. Scalable Processor Architecture-based machines.

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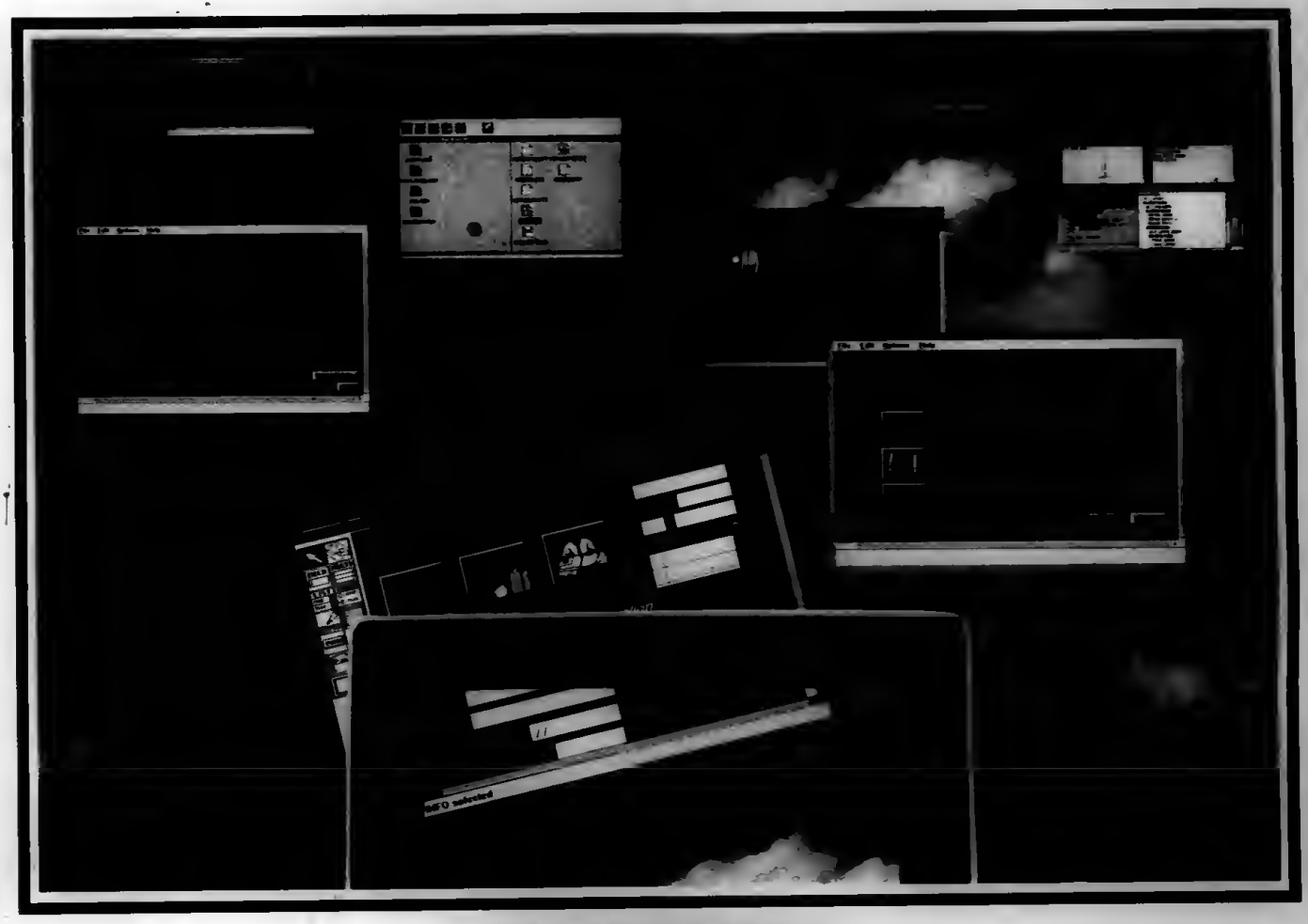

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News Shorts

GE to buy DEC leasing unit

Digital Equipment Corp. has agreed to sell its U.S. leasing business to GE Capital's Vendor Financial Services unit, which will run the 40-employee operation as DECfinancial Services in Westboro, Mass. DEC would not comment on the size of the leasing business, but Sanford C. Bernstein & Co. analyst Barry Willman said leasing "wasn't something the firm had ever emphasized." DEC's leasing customers will not likely see any short-term changes and will not have to renegotiate their leases, said John Buckley, DEC manager of customer administration.

Dell beefs up processes, adds execs

Michael Dell, chairman of **Dell Computer Corp.**, told shareholders last week that Dell is in the process of constructing better systems and processes to be prepared for the future. Dell said the company looks on track to reach $3 billion in sales in 1993. To meet that goal, Dell has hired a number of high-level executives in the last few months, including two more last week: Eric Harslem left **Apple Computer, Inc.** to become senior vice president of Dell's Product Group, replacing G. Glenn Henry, who was named Dell's chief technical officer, and Stephen C. Martson was named vice president of worldwide procurement.

Dow Jones builds client/server software

Dow Jones Telerate, a wholly owned subsidiary of Dow Jones & Co., is building a new generation of financial-information delivery systems based on a client/server architecture. The firm signed a four-year contract with **Hewlett-Packard Co.** to provide Unix workstations to be used as servers for tens of thousands of Intel Corp.-based client machines at customer sites. Future plans call for building a companion Windows "client" to replace aging PCs at many sites, the New York company said.

Marcam announces open strategy

Marcam Corp., a supplier of Application System/400 manufacturing and financial software, introduced its Maples Unix-based product line, its first non-IBM software ever. It said it would introduce other products for Unix systems from HP, DEC and others. To help fulfill that promise, Marcam also announced its intention to acquire **The Varnet Group**, a $12.9 million supplier of open systems software in Montreal. Marcam will acquire Varnet for about 900,000 Marcam shares.

IBM to push CICS competitor's monitor

IBM is starting to tout the transaction monitor that works with the IMS database management system as a high-performance alternative to CICS. IBM has unbundled what was known as IMS/Transaction Monitor and will provide it on alternative platforms, just as the CICS group is doing.

SHORT TAKES **Madge Networks, Inc.** and **Willemijn Holding BV** have settled patent litigation surrounding their networking products. ... Joseph J. Agro, executive vice president and second in command at **Software AG of North America, Inc.**, resigned last week after 4½ years with the firm. No replacement was named. ... **Amdahl Corp.** last week responded to IBM's May introduction of the IBM 3390 triple-density disk drive. A string of two Amdahl drives will contain 272G bytes, near the 270G bytes stored within an IBM 3390 Model 9 unit or a Hitachi Data Systems Corp. 7699, which is expected to ship in 1994. ... A jury in California found George Hwang, founder and president of **ULSI Systems, Inc.**, not guilty of charges alleging use of proprietary Intel documents in developing his company's advanced processor chip.

HP to unveil distributed components

By Jean S. Bozman
CUPERTINO, CALIF.

Hewlett-Packard Co. will try to get out ahead of its open systems competitors today by announcing shipment of two key elements of its distributed computing strategy. The two products, HP Encina/9000 and HP DCE/9000, support Transarc Corp.'s Encina transaction processing monitor and the Open Software Foundation's Distributed Computing Environment (DCE), respectively.

Unix versions of the products for HP 9000 machines running HP/UX will ship right away; MPE/IX versions for HP 3000 users are expected to ship sometime next year, HP said.

The HP Encina/9000 product, based on technology from Pittsburgh-based Transarc, is said to ensure data integrity by supporting two-phase commits, DCE remote procedure calls and a variety of update and recovery functions.

HP may be one of the first vendors to get its DCE tools to market [CW, May 31], but industry analysts said they do not expect them to be widely used until next year.

"That will take another year to 18 months," said Steve Wendler, an analyst at Gartner Group, Inc. in Stamford, Conn. "Except for leading-edge clients who are willing to learn DCE and Encina, the meal is cooking but it's not ready to eat yet."

Widespread adoption of HP's Encina and DCE products may depend on the readiness of information systems sites to move to a distributed computing architecture, analysts said. Until recently, leading-edge users had to custom-code to implement DCE's remote procedure calls, for example.

"The big issue with DCE is that nobody really wants to use DCE code by itself," said John Morrell, a Unix analyst at International Data Corp. in Framingham, Mass. "What they want to do is use tools on top of DCE."

HP said it will ship DCE/9000 Version 1.1, an enhancement to software first shipped in December 1992. It has data-replication and file-naming management.

HP Encina/9000 server prices will start at $3,600; client licenses will start at $150. Prices for the HP Encina/9000 monitor license will start at $5,500. The DCE core services carry a onetime $1,500 charge, while DCE cell director and security services are priced at $3,100 each. HP's DCE application development tools carry an additional $2,000 charge. A five-user DCE cell package will be priced at $10,000, HP said.

'Partners'

CONTINUED FROM COVER 1

their own outsourcing evaluations.

"If that kind of innovation can be interjected, it's got to enliven the field. I like the notion of it," said Harold Hickman, director of data center operations at Northrop Corp., a $6 billion Los Angeles-based defense contractor in the early stages of an outsourcing evaluation.

Those thoughts were echoed by Cecil Labhart, vice president at Providence, R.I.-based Textron, a $9 billion conglomerate that is also weighing an outsourcing decision. "How can you have a partnership if you don't have something like a joint profit and loss to measure it?" Labhart asked.

While users said they would like to see bottom line-based deals (see chart), they acknowledged the difficulty of deriving a formula that accurately measures the effect of an outsourcer's efforts on the client's business performance.

That is not to suggest that more traditional cost/price models are simple. Outsourcing contract negotiations often drag on for months — or outright collapse — under the weight of sorting out payment agreements based on formulas that attempt to gauge functions, including computing volume and how IS operators and developers spend their time.

And as the conventional models build mass, it will take several business results-based contracts to shift the inertia, IS practitioners observed.

In some of the few known instances of such contracts, the outsourcer processes transactions that clearly generate revenue for the client. For example, Electronic Data Systems Corp. draws a cut from the traffic violation payments it processes and collects for the city of Chicago. And Unisys Corp. earlier this year signed an outsourcing deal that gives it a share in each sale it processes for a customer that sells to retailers, according to Harvey Coben, director of commercial operations for Unisys' system support operations.

Bottom line

Companies that outsource IS operations are working with vendors to develop better ways to guarantee that they obtain the most for their outsourcing dollar

OLD MEASURES/GOALS

- Transaction volume
- Computer efficiency
- Development activity

NEW MEASURES/GOALS

- Link prices to number of goods produced (Reviewer is pursuing)
- Revenue sharing (EDS and Unisys)
- Sliding scales (Energy company ties price to industry)

There was some chatter at last week's conference about a few contracts that have been set up on a sliding-scale basis in which payments vary with fluctuations in a customer's fortunes.

For the most part, outsourcers are still wrestling with the issue. "It's complicated. The shared risk in outsourcing is difficult to measure," said Dale Kutnick, president of Meta Group, Inc., a research firm in Westport, Conn.

Outsourcing discussions at Navistar bear out that observation. "The vendors are having a hell of a time with it," Stout said in a telephone interview.

Late last week, Stout, who is talking with two outsourcers, said an outsourcing deal was starting to look unlikely because vendors' preliminary prices are too high.

Ron Johanson, manager of systems technology at IBM's Integrated Systems Solutions Corp. (ISSC), noted that "we've had [the results contract] conversation with several customers, but it's difficult to establish something that protects both parties."

Vendors and IS shops agreed that there are times when one or both parties would not be interested in establishing bottom line-based deals. For instance, although Harvest Foods in Little Rock, Ark., suggested such a setup to ISSC during outsourcing negotiations, the IBM subsidiary did not go for it, according to Harvest Chief Financial Officer Robert Rough. During that time, Harvest was struggling through a recovery period following a leveraged buyout from its former owner, Safeway, Inc.

ISSC said "a lot of your business success is dependent on factors outside of ISSC's control," Rough recalled.

Rudy Hirscheim, a University of Houston business professor and outsourcing consultant, pointed out that sometimes the customer's short-term needs take priority over long-term bottom-line results. "Maybe a cash infusion up front is more important," he said.

Nonetheless, many analysts said they believe bottom-line, or revenue-linked, contracts will catch on. "If there's a shared risk, there's shared reward. It's part of the increased business orientation of IS," Kutnick said.

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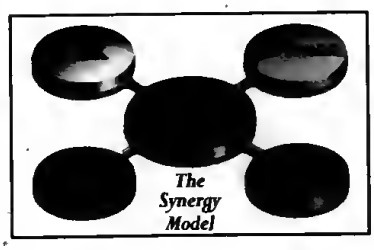

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Software upgrade costs rising

CONTINUED FROM COVER 1

say that if you skip one, you're out," Kasper noted.

In fact, the actual cost of the software is "minor" compared with the installation costs, said Ky Wilson, information resources manager at Stone Container Corp. in Chicago.

"An upgrade is going to have to offer about a 60% improvement in terms of features over the existing package before it's worth upgrading faster than once or twice a year," Tate said.

For IS managers, the move to Windows exacerbates the complexities of upgrades because Windows tends to entice users into deploying more applications than they did on DOS. As a result, managers are often faced with the prospect of having to upgrade several applications a year on each user's desktop.

Without a concerted plan, an upgrade of a single application across 100 users' desktops can take anywhere from 17 to 32 weeks, according to the MMA.

To offset some of the headaches associated with upgrades, IS directors have been relying on network servers, volume purchases and maintenance agreements as a hedge against the difficulties of keeping up with upgrades. For example, consolidating licenses to a network server eliminates the need to physically upgrade software on every machine.

In addition, Kasper said his organization is looking at moving toward maintenance contracts that bill for software on a monthly basis and that also cover upgrade costs.

"We just bought a three-year maintenance license for CC:Mail, but that was easy because we were starting a new system from scratch," Kasper said.

Meanwhile, on the horizon are automated software license managers that will make it easier to track who has what software and hardware configurations across a network.

But this technology is still in its infancy, so most IS managers can expect the upgrade process to remain a labor-intensive task [CW, June 7].

"Right now we handle all the installation. To simplify this, we're going to put our applications up on servers rather than on each user's desktop," Wilson said. "We've looked at the automatic distribution software, but right now it's pretty rudimentary. They basically just copy a file. They're not aware of configurations."

Finds files when you can't.

Numbers game

Software upgrades accounted for just 16% of the total software units shipped in 1992, according to the Software Publishers Association (SPA) in Washington, D.C.

However, some analysts said the SPA's numbers do not accurately reflect the influence of upgrades because they do not include users who move from DOS to Windows. Analysts maintained that this is actually a manifestation of the upgrade business rather than the adoption of a new environment.

"If you view Windows as an upgrade to DOS, then the impact of upgrades is significantly higher. The 1990s is the decade of upgrades," said David Coursey, editor of "P.C. Letter" in San Mateo, Calif.

And this activity is expected to increase dramatically this year as another generation of Windows applications rolls out.

Lotus Development Corp. last week delivered Release 4 of 1-2-3 for Windows, and WordPerfect Corp. recently delivered an enhanced version of its word processor for Windows and has plans to deliver a major upgrade later this year. Microsoft Corp. is expected to deliver major upgrades of its Excel spreadsheet and Word word processing software in the second half of this year.

— Michael Vizard

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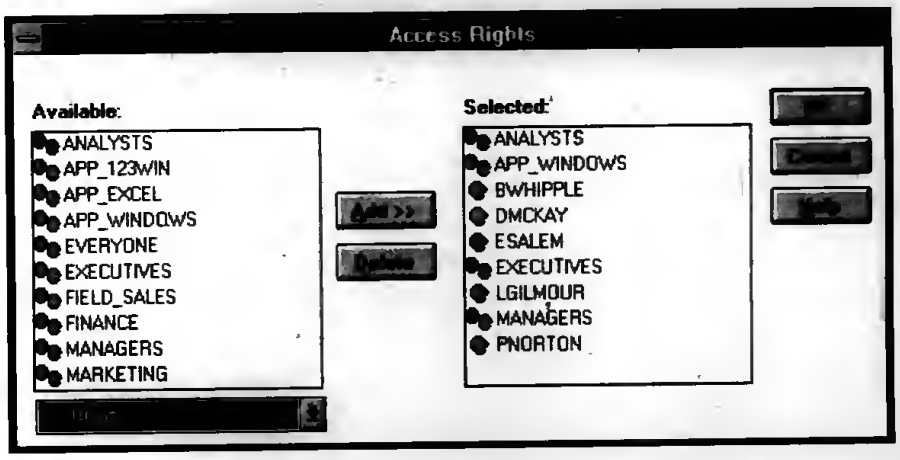

Peter Norton, the leader in Windows utility software.

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NOVELL. The Past, Present, and Future of Network Computing.

EPA plants seeds for 'green PC' project

By Michael Fitzgerald
WASHINGTON, D.C.

Last week's official unveiling of the Environmental Protection Agency's Energy Star initiative drew widespread support from the computer industry. The initiative looks likely to become a common part of PC design in the future.

Vendors ranging from the IBM PC Co. to Intel Corp. announced products that will help meet the government-mandated Energy Star specifications, which were designed to curtail PCs' electricity use. Energy Star PCs must run at less than 30W, compared with the 200W most run at today.

Most of these products will showcase power management features, such as sleep modes, that have typically been found on notebook computers.

Analysts said "green PC" initiatives, such as system components that run at 3.3V and low-emission monitors, will gain momentum in the marketplace and should become standard systems parts.

"In the next eight to 12 months, these features will be just rolled into the product lines," said Randal Giusto, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

The government mandate (see story below) should guarantee healthy sales for energy-efficient devices. Still, even users at governmental agencies said they would not rush right out to replace all their systems with green PCs.

"We're definitely pleased by this, but we'll probably phase in this sort of technology over time," said Richard Jungbluth, an air-quality engineer at the South Coast Air Quality Management District in Diamond Bar, Calif.

IBM PC Co., which introduced a radically different green PC, the Personal System/2 E, last week, said its design was more important than energy conservation.

"The energy conservation side is a bonus," said James G. Turner, general manager of premium systems at IBM.

The PS/2 E measures 12- by 12- by 2¾-inches and weighs less than 11 pounds. It can be hung from a wall. The system can be purchased with either a 14-in., low-power monitor or a 10.4-in., low-power flat-panel, active-matrix color display.

Turner said street pricing would fall near $2,200 for a PS/2 E with the 14-in. CRT or in the mid-$4,000 range with the flat-panel monitor.

Vendors such as Hewlett-Packard Co. have released conventional PCs that meet the EPA requirements.

Intel also chose last week to announce its new SL Enhanced Intel486 chips. These ranged from a 25-MHz 486SX to a 33/66-MHz DX2 processor.

Other vendors with products or support for the Energy Star program include Apple Computer, Inc., Compaq Computer Corp., AST Research, Inc., Gateway 2000, Inc., Advanced Logic Research, Inc., Acer America Group, NEC Technologies, Inc. and Zenith Data Systems.

Saving energy

It's not every day that computers literally take center stage — at a White House briefing.

"Let's see what we have here," said Vice President Gore, pulling away a white sheet that covered new energy-efficient PCs and printers, recipients of the EPA's Energy Star certification.

Flanked by 22 beaming executives from computer companies such as Acer America and Zenith Data, Gore saluted EPA analyst Brian Johnson, who in just a year dreamed up and headed EPA sponsorship of industry development of computer gear with drastically reduced power requirements.

The vice president said computers account for 5% of all power used by commercial activities, noting that use will rise to 10% by the year 2000 if no action is taken.

— *Gary H. Anthes*

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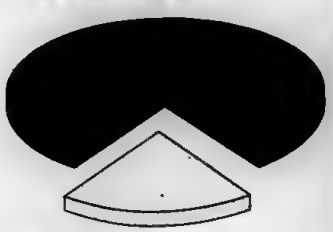

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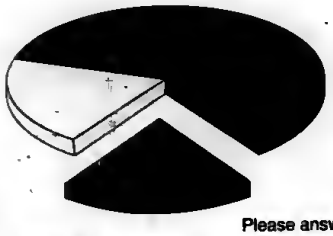

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- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Mgt.
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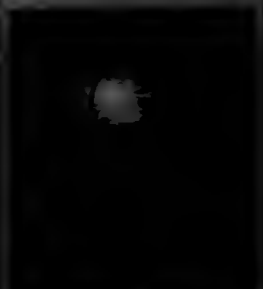

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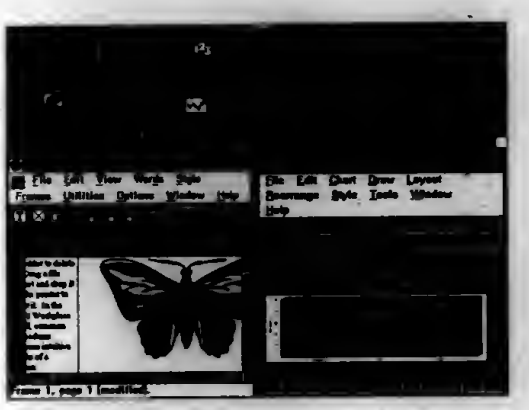

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IBM boosts power, connectivity of 3172

Offers 45% higher throughput for TCP/IP connections and twice the output for SNA-based links

By Elisabeth Horwitt
WHITE PLAINS, N.Y.

IBM introduced a far more powerful version of its 3172 Interconnect Controller Model 3 last week, positioning it as a router/gateway that can interconnect local-area network users to up to 16 IBM mainframes on an Escon network.

Until now, the 3172 has provided host-channel connections for Token Ring and Ethernet LANs running Transmission Control Protocol/Internet Protocol (TCP/IP) or Systems Network Architecture (SNA).

However, the cluster controller has been losing market share to multiprotocol router backbones that can flexibly connect LANs to one another, as well as to multiple hosts, according to Todd Dagres, a senior analyst at The Yankee Group, a research firm in Boston.

Last week's announcement represents IBM's attempt to extend the 3172's life span, he added.

With a faster processor, more memory and more hard disk storage, the enhanced Model 3 boasts a 45% higher throughput for TCP/IP connections and about twice the throughput for SNA-based links, an IBM spokesman said.

In addition, the controller supports Escon, IBM's channel extension software, which enables it to route LAN transmissions among 16 IBM hosts, compared with the two hosts supported by the original model's channel connection, IBM said.

Escon also supports high-speed links between the LAN and multiple hosts, which can be extended as far as 37 miles, the IBM spokesman said. In contrast, a basic channel-based link is limited to 400 feet.

LAN software packages

IBM also announced 3172-based versions of its LAN Resource Extension and Services (LANres) and LAN File Services software packages.

LANres enables an IBM mainframe to provide file and print services, data distribution and LAN administration for Novell, Inc. NetWare installations. LAN File Services provides similar services for OS/2 LAN Server and Sun Microsystems, Inc. Network File System clients.

New versions of the above LAN software packages now include Escon support, and they can link LAN clients up to MVS/ESA hosts, IBM said. The original products linked up only to VM/ESA hosts.

The enhanced 3172 model can also support TCP/IP and SNA transmissions over the same LAN port, IBM said. Previously, each LAN protocol needed its own port.

This enhancement allows a 3172 for the first time to support both types of traffic between a mainframe and a Fiber Distributed Data Interface (FDDI) network because 3172 Model 3 has only one FDDI port.

The enhanced Model 3 is available now, priced from $16,029 to $53,935, depending on configuration.

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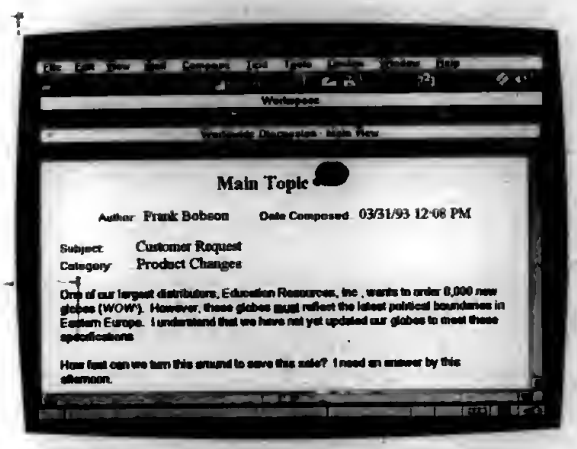
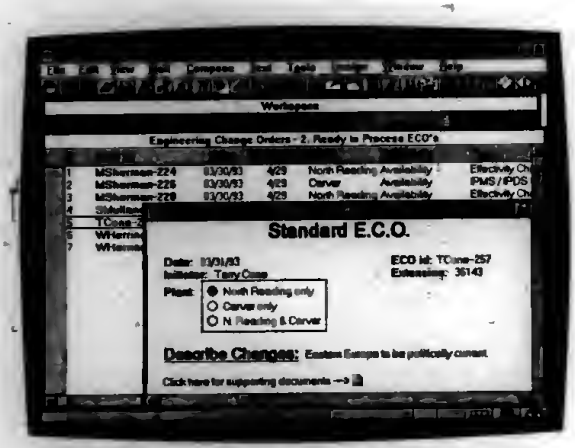
TRBA

1. This is James' Notes desktop. He uses it to access information and work quickly with people in all departments to solve problems worldwide. James clicks on the Worldwide Discussion application to catch up with important company news. The SmartIcons across the top make it even easier to work in Notes.



2. The field rep in Texas is working on a request from a customer. But to make the sale the product, in this case a globe, has to be changed to reflect the most up-to-date countries and borders. And evidently time is critical. The competition must already be in there pitching.



5. Once he has the information, he clicks on the Engineering Change Order application to request specific product changes from the plant in North Reading. He links the supporting Newswire information to the E.C.O. It will be easily viewed with a single click of a button.

6. After lunch he opens a document from Ellen in product development who has responded with the necessary changes and scheduling information. The new art was scanned directly through Lotus Notes Document Imaging from the art department. James approves the art for manufacturing.

How Lotus Notes Relea

Thousands of companies already know how Lotus Notes® helps them respond more quickly and effectively to the demands of everyday business. Now Release 3 extends that power to new dimensions.

Just watch how James Carlton, a new district manager at Global Publishing, uses Notes Release 3 to solve a major global problem in short order. See how he uses information from on-site and remote locations. From both inside the company and external sources. Across a

variety of platforms. How he uses applications such as Account Tracking, Newswire, and Engineering Change Orders to get a new product developed fast. And how he creates an informal team spanning a range of departments to do it.

With the new Release 3, Lotus Notes now supports all the leading GUI platforms: Windows,™ OS/2,® UNIX,** even Macintosh.®

Which means the award-winning workgroup power of Lotus Notes is now readily available to help virtually all networked businesses improve

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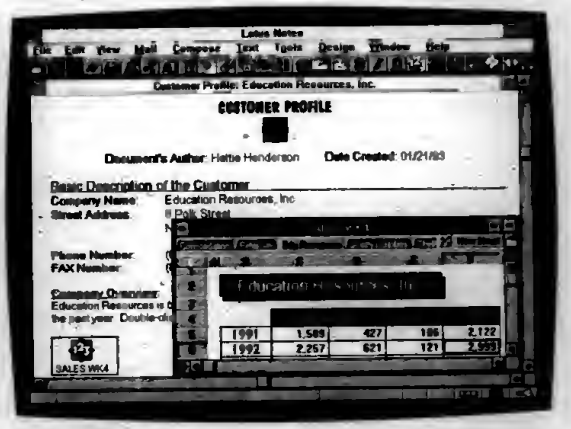
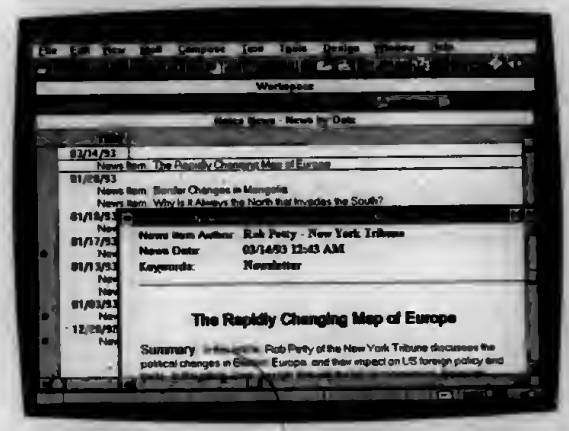
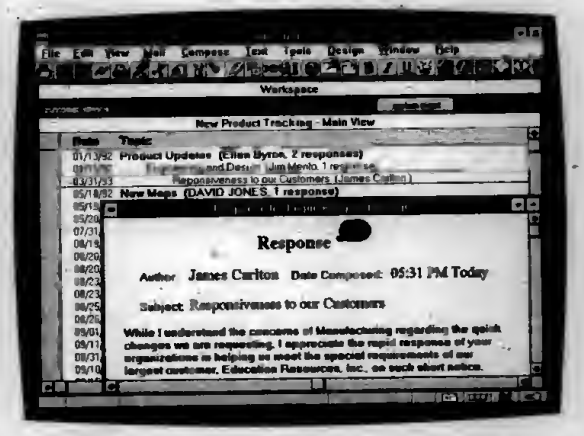


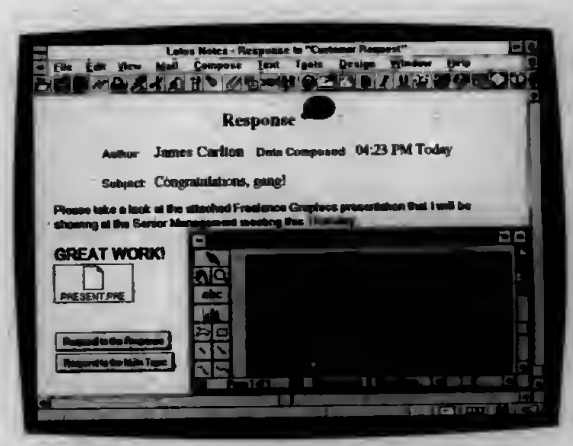
3. He clicks on the Customer Tracking application to learn more about this customer. The profile includes an attached 1-2-3® spreadsheet. He double clicks the icon to open the spreadsheet and finds that Education Resources is a very large customer that pays its bills.



4. James' next step is to click on the Newswire database for the most up-to-date report on precisely what geographical changes will have to be made on the new globe. And just how extensive they'll be.



7. On the Product Tracking application, all departments involved have confirmed that they can meet the schedule. However, they've cautioned James to be careful about rushing schedules in the future. James uses the Discussion database to acknowledge their comments and thank them for their efforts.



8. Wanting to record and promote the team's accomplishments, James puts together a presentation for senior management in Freelance Graphics. Then he posts the presentation in the Presentation database so everyone can see how the team rearranged the world to save a big account.

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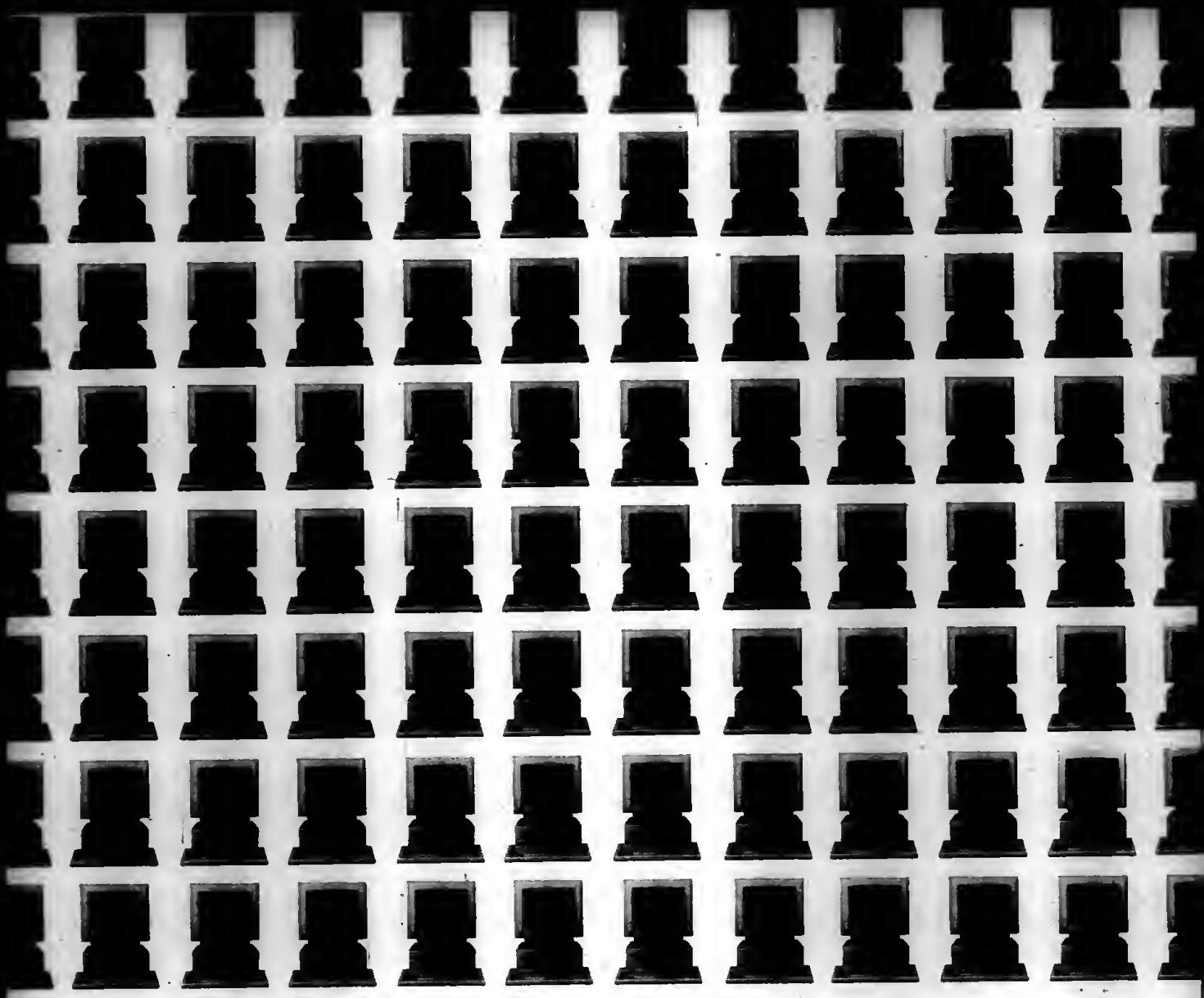

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More than just a game

Next-generation CD-ROM players might have other not so obvious uses

By Ellis Booker

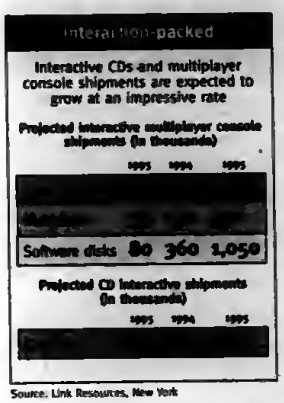
Now that Universal Pictures' *Jurassic Park* is out, makers of the interactive CD-ROM video game of the same name can finally show *their* dinosaurs in public.

Earlier this month at the Consumer Electronics Show in Chicago, eager game afficionados were disappointed to learn that the demonstration version of The 3DO Co.'s Jurassic Park Interactive did not include dinosaurs. The company had agreed not to show that part until the movie was released.

At the moment, San Mateo, Calif.-based 3DO is the most closely watched player in the multibillion-dollar video game industry. It has garnered $48 million from its initial public offering.

The buzz about 3DO, a coalition of consumer electronics, communications, entertainment and software companies, has to do with a hardware/software standard it developed called the Interactive Multiplayer. The multiplayer is an interactive, multifunctional CD-ROM player that is compatible with music CDs and Eastman Kodak Co.'s Photo CD standard (see box for more details).

To date, 3DO has licensed the technology to some 302 software companies. Three hardware vendors have also licensed the technology. In the fall, Matsushita Electric Industrial Co. will ship the first 3DO player, a $700 system to be sold under the Panasonic label. AT&T and Sanyo Electric Co. also plan to bring out 3DO platforms.



Source: Link Resources, New York

However, the first 3DO player will not hit the market until fall, and it will have only 10 or so software titles available upon release.

Meanwhile, not everyone is thrilled with the 3DO technology.

"It's too expensive to be a video game and too limited in its user interface and access to be useful as a computer," said Bart Mallio, division manager at Venture Development Corp. in Natick, Mass.

Besides, Mallio added, software, not hardware, has always been the key to the market. "Nintendo's success has been due to a strong, intuitive sense of what's *in* in the game market," Mallio said.

Leaving aside the games platform, how will interactive CD-ROMs develop?

"There's education, there's information delivery ... there's point-of-purchase displays and kiosks," suggested Walter Miao, vice president of technology at market research and consulting firm Link Resources Corp. in New York.

Miao said few developers are pursuing such markets; they are banking on games for now.

Another strategy, Miao said, is to use the platform for video — an application being emphasized by 3DO competitor Philips Consumer Electronics Co. At the Consumer Electronics Show, Philips introduced a $249 software adapter that provides digital, full-screen, full-motion video to its Compact Disc-Interactive (CD-I) players. Philips also announced agreements with Paramount Pictures and Capital Cities/ABC Video Productions, Inc., both of which plan to release video content for CD-I.

Meanwhile, the interactive CD-ROM winner in the games market could indirectly influence the future direction of desktop multimedia, given that developers will be encouraged to write for the platform standard with the most widely installed base of machines.

For instance, video games giant Sega sold 180,000 of its proprietary CD-based system in the fourth quarter of 1992 and, according to Miao, may sell as many as 700,000 more this year.

"Toys do matter if we're having an installed base war over CDs," he said, noting that the installed base of CD-ROM drives is 3 million or 4 million today.

CD-ROM technology: New and future

3DO TODAY:

- In its initial incarnation, the 3DO Interactive Multiplayer is a peripheral to a television, not a PC.
- Its graphics animation performance, claimed to be 50 times that of current PCs or video games, is accomplished via a pair of specialized graphics engines. These engines are able to display or move up to 64 million pixels per second, greater than the 1 million pixels of 16-bit or 3 million pixels of 32-bit systems.

FUTURE PRODUCTS:

- An array of user devices, from controllers and 3-D glasses to memory-card storage for saving games in progress or other information.
- Cable TV hookups (AT&T is investigating such networked applications).
- PC interfaces (using as-yet-unannounced expansion cards).
- MPEG Video (the Interactive Multiplayer features a cartridge port designed specifically for future video compression hardware).

Users starting to talk up voice recognition

By Michael Fitzgerald

People talk to their computers more than they would probably admit, generally to express their feelings about some little idiosyncracy, like a system crash. They don't really expect a response, though an apology might help.

But a growing class of users talk to their computers with the express intent of getting a response, and voice recognition may become a hot button for users. Compaq Computer Corp., in conjunction with Microsoft Corp. and Analog Devices, Inc., already offers a product called Business Audio that lets users give commands to their PC systems.

Recently, IBM introduced a version of its Continuous Speech Series (ICSS) for the PC, which offers 1,000-word recognition from a 20,000-word vocabulary for as little as $299.

While most people think of speech recognition as something largely for people who cannot use their hands, users are developing numerous ways to do things.

For instance, two Las Vegas casinos use Blackjack Survey Voice from Casino Software Services, Inc. to track blackjack player skill levels and catch card-counters. A casino employee, using game tapes, tells a computer database what cards to enter. The information is then analyzed so the casino can see how well players are doing. The product also tracks how much money is spent per hour, how much the table takes in or pays out and so-called complimentary players — people who receive free rooms and sometimes free flights in exchange for promising to spend a certain amount of time at high-stakes tables.

Derk Boss, director of surveillance at The Tropicana casino, said that the software, which has been in place for three months, has "saved us a tremendous amount of time."

Some folks are taking an opposite tack, trying to use speech recognition for the benefit of others. Lake Charles Memorial Hospital in Lake Charles, La., is developing an early prototype of a recognition application based around ICSS.

"We have 1,000 people here involved in health care, doing activities with their hands and their eyes, so we're looking for some way to increase the amount of paperwork they can do without taking people away from their primary duties," said Stephen Veazie, vice president of information and technology at the hospital.

"It's much different than typical systems development because using speech as the basis of the application is highly unusual," Veazie said.

He said the project would give nurses and physical therapists the ability to move around and talk and not have to enter data.

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No panacea

To hear some industry executives talk, you'd think object-oriented programming (OOP) is going to cure cancer, put Americans on Mars and have us all working 30-hour weeks.

Yes, object orientation is an important productivity concept that will enable developers to create more stable software. But there's a faint hint of snake oil here and a reminder of past promises gone astray.

Users are under the gun to adopt OOP languages such as C++, build from class libraries and employ inheritance and encapsulation in all they do. But s very fine line exists between the old concept of a subroutine library and a class library. The benefit of object technology is that programmers can share code and reuse objects. But programmers have been reusing code for years. They just called it something else.

The concepts underlying OOP are indeed important. The most critical idea is that it brings some element of structure to what in most programming shops is still a pretty unstructured task. How many of you have Cobol programs in production that lack sufficient documentation? I thought so. Wouldn't it be nice to have an organized, well-documented library of code objects that you could pull out and drop into programs as needed? Of course. Will OOP get you there? Maybe or maybe not.

The fact that something is object-oriented does not make it well-structured, well-documented or efficiently coded. That's still a job for humans. Nor does object orientation necessarily make programmers more productive. On the contrary, having technical people encapsulate and document every chunk of program code is only going to slow them down. Look at how drawn out the development cycles have become on Windows products. Even the most object-oriented of software developers have admitted that they get little or no productivity gains from OOP on the front end.

The big benefits come in easier maintenance, speedier enhancement and improved software reliability. That is where OOP shines. Code that is well-documented and organized into reusable libraries is going to be easier to maintain and simpler to improve. There's nothing object-oriented about that. In fact, the embattled field of CASE always promised much bigger payoffs in the maintenance cycle because it forced programmers and analysts to organize their work clearly before coding. Before that, structured methodologies took a shot at making software better by forcing developers to follow rules and document what they did. Same idea, different approach.

Perhaps the art of software development just doesn't lend itself to regimentation. In that case, OOP may serve an important purpose by giving developers a set of standard class libraries to use. The endorsement of major industry icons like Microsoft and Borland helps legitimize the concept. But even the best OOP products won't help a development group have its own house in order.

Paul Gillin, *Executive editor*

Windows NT a winner

It is hard for me to understand how David Coursey's column "NT isn't worth the wait" [CW, June 14] has a place in your fine periodical, except as one of those things that gets printed for the purpose of generating s reaction. Well, here's some reaction.

Windows NT is a Windows 3.t power user's dream. The potential of 32-bit independently multitasked applications, as demonstrated by the NT applets, is tremendous. This is s significant benefit that allows formatting and copying of files to floppy disks, as well as loading large programs and databases, while critical high-speed communications operations are in progress.

NT delivers reliability, security and audibility that was previously unheard of on the desktop. It stands up to the best mainframe system in these key areas. NT logs snpport GUI ntilities that let support people examine objective evidence of user-reported problems. The NT performance monitor enables diagnosis of performance problems with resolution that compares favorably with the best mainframe tools.

Is the NT cup partially full or partially empty? Coursey focuses on his belief that "NT is often slower than Windows 3.1." It is also often faster. NT's 32-bit graphics engine is like plugging in an accelerator card. NT's appetite for 24M to 32M bytes of memory is no more perplexing or costly than Windows 3.0's desire for 4M to 8M bytes when it first came out.

Coursey's lack of clarity "as to exactly what NT does that OS/2 or Unix doesn't already do as well or better" has to come from lack of experience with all of the above. What NT does better than Unix is run the huge library of Windows 3.t applications with superior hardware efficiency and an easy-to-install system with a familiar nser interface.

NT was designed to serve as the basis for the solution to the computing problems of the year 2000. By then we will be looking at near-gigabyte memory and multigigabyte hard drives just as we look at 8M-byte memory and 200M-byte hard drives today. Our applications will no doubt need them.

While NT looks a little overbuilt today, it will let us grow on a smoothly evolving system software base until the year 2000 and beyond. Not only is NT worth the wait, it will be worthy of the future.

Arnold B. Krueger
Grosse Pointe Woods, Mich.

Morph mistake

Gary L. Sesano's article "Get ready to 'morph' yourself" [CW, June 7] claims the motion picture industry invented a new word — transmorgraphication. Calvin and Hobbes have been transmorgrifying for years.

The *American Heritage Dictionary* defines transmogrify as "to change into a different shape or form, especially one that is fantastic or bizarre." The only thing the motion picture industry did was misspell it.

L. Joseph Duran
Burbank, Calif.

Learn to manage

Elaine Bond's premise in "Have tools, lack talent" [CW, May 24] is widely accepted, but the article allows the audience to quickly confirm their opinion that it's the programmer's fault! This obscures the real source of the problem — senior management.

This is the message that must be acknowledged before significant change and gain will become apparent.

Evidence that this message is not being received fills the employment pages of every newspaper as companies continue to advertise for technology specialists in lieu of technology managers.

Software managers must be conversant in current technology and technology trends, but to deliver software profitably, they must be skilled managers first.

Let's face it, most developers are generally performing a function according to the requirements of their employer and are remarkably nonresistant to change in process or procedure. The writer, from her position of influence, would do well to focus similar articles, and her attention, where it will generate the most benefit — senior management.

David W. Carey
Chelmsford, Mass.

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According to my computer, you don't exist. Next!

Joseph Maglitta

The airline's computer terminal was so dumb I wanted to reach over and slap some smarts into it — especially since my flight had already started boarding.

"I'm sorry, sir," the counter attendant said. (Why didn't I believe her?) "I can't give you frequent-flier credits unless you have your number. My computer doesn't have those numbers."

"But," I explained, "I can't find my card, so I don't know my number." I could feel my eyelid start to twitch.

"I'm sorry, sir." (Again!) "But if you fill out this form and mail it to the address on the back, along with your boarding pass, you'll receive full frequent-flier credit for the flight."

"BUT THAT'S THE PROBLEM!" I said more loudly, face reddening. "I DON'T KNOW MY NUMBER!"

"I'm sorry, sir." (Again!) "This computer doesn't have those numbers."

Jack Nicholson, trying desperately to order wheat toast in *Five Easy Pieces*, flashed through my mind. So did Michael Douglas in *Falling Down*. I grabbed my stupid form and huffed onto the plane.

Driving home, I decided to stop into my local megachain pharmacy. "I'm sorry, sir," the pharmacist said. "That prescription was originally called into one of our other stores. I can't fill it for you. We don't share computers."

By the time I visited my local video chain, I knew the words by heart. "I'm sorry, sir," the counter clerk said. "That film was rented in our Cambridge store. It has to be returned there because each store has its own computer system."

It all blew later that week in the supermarket checkout line, when I discovered I'd forgotten my courtesy card.

"Can't you look in a file?" I asked, catching myself too late. In a flash the assistant store manager had lugged over a 2-foot-thick book of computer printouts and began searching for my name. "That's N-A-G...?"

Minutes passed. "I'm sorry," she finally announced. "But we have no record of your card. Did you sign up at this store or another one of our branches?"

I snapped. "LOOK," I yelled, swinging a bunch of organic carrots. "Do you realize that it's easier to use Tootie to order a $299 glazed porcelain bunny on the Home Shopping Channel than it is to buy a loaf of bread at this market? Take my money! TAKE MY MONEY!"

As a scared-looking boy bagged my groceries, the checkout girl swiped a bag of coffee four times across the scanner. Finally, it bleeped into the system.

"I hate computihs," she confided. "They make everything wicked hahd."

I know that linking systems and networks is far easier said than done. But if the customer is always right, why are we still so often wronged by computers? I have sworn to patronize as little as possible any business that causes me computer-related headaches.

I bet I have lots of company.

Maglitta is *Computerworld*'s senior editor, management. He likes computers enough to be tough on them and their keepers.

Which operating system will win?

OPEN MIND *by* Esther Dyson

Pardon me, but that's a stupid question.

The philosophical answer is that none has ever won before, and none ever will. The game is never over, and all a particular operating system can achieve is dominance of a particular market for a certain stretch of time.

So what's a user to do? The more practical answer is that if you choose one of the standards, you'll probably be OK. Basically, you want enough variety to have a choice but not so much that you risk making a mistake. Although if you make a big enough mistake (say, Wang), you'll probably have enough company to attract suppliers of tools, bridges and other coping facilities. The applications and other value you build won't go to waste.

Unix, Windows NT and OS/2 are likely to coexist on the server; Windows and Macintosh live on the clients and other players have hit parts. No single operating system will drive out all the others. The recent obsession with standards and "openness" has caused the ridiculous notion that a single operating system can work in all environments, for all applications.

Microsoft, more than anyone, has muddied the waters with Windows everywhere. In fact, Windows is just a brand name that will be attached to a range of operating systems, from DOS (for single-user PCs) to Cairo (for interconnected servers) to Chicago (for high-end, single-user, multitasking workstations). Then there's Windows At Work (for fax machines and the like) and, I have it on good authority, Windows For Toasters. What they have in common is not so much the operating system as common APIs so that, if a function exists in an environment, you can get to it the same way.

What does all of this mean for you? Right now, you're being wooed with a huge variety of operating systems and lures such as running Windows on Unix machines and running Unix on PCs.

Clearly, the value must lie in those applications that people want to run everywhere, not in the platforms they run on. As a manager of systems, your job is to manage the corporate applications and data, not to fuss with which operating system has the best memory-management tuning this week.

As a user, then, your most difficult choice is which applications or development tools to use. The good ones will end up on all the standard platforms anyway.

At that point, the battle may be between companies such as Taligent and Andersen Consulting, with their task- and industry-specific application frameworks. The trick is to know at which level to make your decision. Andersen's systems will be available on a variety of operating system/hardware platforms, as will Taligent's, ultimately.

The pitch is: "Come with us! We can save you from the horrors of operating system dependence if you choose our environment."

Does this mean that all your problems will be solved? Of course not. The hidden message is that you may be independent of the operating system vendors, but you will be dependent on Taligent or Andersen or whomever.

But that's part of being a grown-up. You have to make risky choices if you want to be ahead of the pack.

By the time the answer is obvious, there will be no percentage in making the bet, just as now there's no real percentage in choosing between Windows NT and Unix. Either is fairly safe for server applications, but neither is going to give you much benefit.

If you really want to take a risk and gain competitive advantage, you should already be looking at Taligent. Or you could have been looking at Next.

Dyson is editor of "Release 1.0" and Rel-EAST," newsletters on new technology and new computer markets in Eastern Europe

Charles Babcock

Alpha imperatives

"Is it worth doing business any longer with Digital Equipment Corp.?" you ask yourself. Your business manager was skeptical of your last purchase order with DEC's name on it. You're troubled by the lack of a clear message coming out of the company and wonder if DEC hasn't been permanently bypassed by the downsizing trend.

DEC is trying desperately to regain its footing with Alpha. But this will be a tricky maneuver. In watching DEC, one still gets an unnerving sense of a lack of focus, which sells short some of the company's hidden strengths.

Alpha is an elegant design and one of only two real 64-bit systems available, but its initial sales have been slow. It is estimated that any modern chip producer must invest $1 billion a year to sustain microprocessor design, new fabrication lines and chip sales. In order to give Alpha the two to three years it may need to become self-sustaining, Robert Palmer, the new DEC president, will have to curtail spending elsewhere.

It seems to me DEC must concentrate on giving Alpha a chance to compete. The core of DEC's culture lies in hardware engineering and manufacturing, and it is one of the few firms with a shot at staying competitive there. But to sell Alpha chips, it will have to get the price below Intel's Pentium, which will delay any profits on DEC's massive investment.

At the same time, DEC must demonstrate that it is capable of rapidly pushing the Alpha line forward, much as Intel encourages confidence in its ability to upgrade the 8086 line. In fact, DEC has second- and third-generation Alphas on the drawing boards that push the clock speed above 200 MHz.

To create the breathing space Alpha will need, other parts of the firm will have to be cut back. If they aren't, doubts will arise about DEC's ability to survive, which will overshadow Alpha's merits.

Such a thing is difficult to do at a company like this. DEC was organized around the principle that it would solve computing needs from top to bottom — hence the broad scalability of the VAX, the wide range of software and its strength in networking.

This expertise is expensive to maintain, particularly when newcomers have begun specializing in one piece of the mosaic. If DEC is to sustain Alpha, it will have to choose where it wants to remain in system software and networking.

The VMS operating system still has life in it, thanks to the 200,000-plus VAXs that run it, but development resources must flow into either VMS or a credible form of Unix. DEC has put its money where its mouth is with OSF/1. Now it must tell the world whether this is an ongoing investment or if it finds some other form of Unix a less expensive alternative.

DEC must consider cutting expenses on any proprietary product that is not profitable and a market leader. Rdb is a good database system, but under the circumstances it is unlikely to command the ongoing development resources of Oracle, Ingres, Informix or Sybase.

DEC is trying hard to sell PCs but probably makes little or no money when it does so. Nevertheless, PC sales give it the opportunity to follow up with integration services, like Pathworks.

In his Comdex address, Palmer made it clear he considers Windows NT an integrating force and that he intends to capitalize on the opportunity to sell Alpha servers running NT. This may prove to be a large step in a new direction, but DEC must follow through with a line of integrating services that begin to scale Alpha and NT further up in the company.

Microsoft clearly hopes DEC and Alpha will help it do this, and for DEC, beginning again, closer to the end user, is one of its few clear shots at a future role.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

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DOS 6.0 utilities disappoint some

By James Daly

■ Early upgraders to Microsoft Corp.'s DOS 6.0 may be thrilled to discover a passel of new utility features on the refreshed operating system.

But don't get your hopes up. And whatever you do, don't get rid of your existing third-party utility applications.

Early users urge caution in placing any great reliance on the utility features, which they described as rudimentary.

The dark side of the equation, however, is that Microsoft's March entrance into the competitive utilities field may eventually force producers of better products out of the market.

Fifth Generation Systems, Inc. President Barry L. Bellue, whose company produces a line of utilities software, said news of the DOS 6.0 utility additions caused a 35% drop in sales of utility applications among all manufacturers in a recent quarter. Bellue, who claimed to be in close contact with his competitors on this subject, said many are worried about the utilities-laden DOS 6.0.

Stac Electronics, Inc. — which produces a highly regarded compression utility called Stacker that competes directly with DOS 6.0's DoubleSpace — is having some financial problems and has laid off nearly 20% of its 200-member work force. Stac is also suing Microsoft, claiming that Microsoft uses patented Stacker technology in DoubleSpace.

That is a sad prospect for longtime users. "Stacker is a much better tool, but I'm going to have to get rid of it because everyone using DOS 6.0 is going to have DoubleSpace preinstalled, and I'm going to have to support it," said John Nichols, a research analyst at Mayflower Transit, Inc. in Indianapolis.

Stac recently introduced Stacker 3.1, which converts DoubleSpace files to Stacker.

Meanwhile, users face more than the potential loss of more in-depth utilities. Microsoft's entrance into the utilities market may ultimately result in more costly support for users. Fifth Generation Systems, for instance, provides 24-hour, toll-free customer support for one year. DOS 6.0 users only receive 90 days of free support, after which they must dial a 900 number at the rate of $2 a minute or opt for a single $25-a-call charge.

Despite the pressure of Microsoft's market might, some users are sticking to their guns, saying they will not give up the more meaty products of third-party vendors.

"DOS 6.0 will give us a quick and easy way to get better backup, data compression and virus protection to the average Joe, but there's no way it's going to satisfy our power users," said Rich Pickett, who has installed more than 300 copies of DOS 6.0 as director of computing services at the Oregon Institute of Technology in Klamath Falls, Ore.

Others will jealously guard their own third-

DOS utilities, *page 45*

Portable computers

ThinkPad plan reaps kudos

By Michael Fitzgerald
SOREGS, N.Y

IBM has had trouble being in the right place at the right time in the PC market, but it seems to have reversed that trend in the notebook market with the ThinkPad.

As evidence of its turnaround in the notebook arena, IBM announced two new ThinkPad models last week: the 350 notebook, which includes a passive-matrix color and monochrome model; and the 500 subnotebook, which may accelerate the company's newfound success in the portable market. These products continue IBM's aggressive feature and price combination in the portable market.

"Those look like they're going to be hot products," said Andrew M. Seybold, editor in chief of the "Outlook on Mobile Computing," a newsletter in Brookdale, Calif.

Thanks to its aggressiveness, IBM has vaulted from Nowheresville to near the top of the notebook market and, in the process, has won back customers who had forgotten how to spell IBM.

"We hadn't used IBM in seven years, and [ThinkPad] was the product that got them back in here," said William I. Lodge, project leader at Turner Corp., a multinational construction company based in New York. "The ThinkPad is clearly the notebook of choice here."

At New York Life Insurance Co., IBM PC products were completely off its agency systems group's recommended buy list before the ThinkPad 700C came along. Richard E. Nelson Jr., vice president of agency systems, cited the big screen and aggressive pricing as the reasons for IBM's return.

User participation

Users have also had unprecedented input into product development at IBM. The ThinkPad brand team has put together several user and analyst advisory councils and appears to have taken users' comments to heart.

For instance, when IBM designed a 240M-byte hard drive for the ThinkPad 720 that did not fit in the ThinkPad 700,

ThinkPad, *page 49*

IBM PC Co.'s new notebooks

ThinkPad 350/350C: Both systems have a 25-MHz Intel Corp. i486SL chip and PI local bus graphics. They display 256 colors and include a PCMCIA slot. They offer a minimum two-hour battery life on the color (up to seven hours) and 2½ hours on the monochrome version (up to nine hours). The 350C has a 9.2-in. passive-matrix color display and weighs 5.8 pounds, while the 350 has a 9½-in. monochrome display and weighs 5.2 pounds. Estimated street pricing, with a 120M-byte hard drive, is $1,950 ($2,475 for the color model). A 240M-byte hard drive will be available next month.

ThinkPad 500: The 10.1- by 7½-in. subnotebook weighs 3.8 pounds, uses the 25/50-MHz IBM 486SLC2 and supports PCMCIA. It has a three-hour minimum battery life and a special "self-charging" battery. With an 85M-byte hard drive, it costs $1,999 on the street. A 170M-byte hard drive will be available in August.

Horse breeder bets on Mathcad to win

By Michael Vizard
LAWRENCEBURG, KY

The sport of kings, a longtime staple of the Kentucky bluegrass region, may be going the way of the automobile and consumer electronics industries. Japanese investors have purchased the horses that sired some of 1993's leading racehorses — and an American breeder is fighting back with high technology.

High technology *is being used to help breed champions such as Sea Hero, winner of this year's Kentucky Derby*

To cut the odds on horses such as the sires of Sea Hero, winner of this year's Kentucky Derby, and Dancing Brave, winner of the English Derby in the UK, from breeding a champion, one Kentucky breeder of thoroughbred racehorses is turning to high technology. Both sires were recently purchased by Japanese organizations.

Using the Mathcad software package from MathSoft, Inc. in Cambridge, Mass., Foye Equine Genetic, Inc. is sorting through the massive amounts of genetic information required to create a thoroughbred that will hopefully one day wear the roses at the Kentucky Derby.

"Pedigree information on thoroughbreds goes back to the mid-17th century across 23 generations. The complexities of breeding are enormous," said company President David Foye.

Combating Japanese, Arab threat

According to Foye, who was responsible for breeding 1991 Kentucky Derby winner Strike the Gold and 1990 winner Turf Male ftsallgreektome, the increased interest of Japanese and Arab investors in thoroughbred racing is a threat that will require the racing industry to adopt better analysis tools.

"The Japanese in particular have a reputation for quality control. Today, most of the data on thoroughbreds is on-line, but it's underutilized or crudely used by U.S. breeders," Foye said.

Using Mathcad, Foye said he gets an easy-to-use statistical analysis tool that includes modeling and forecasting tools that allow him to forecast the effects of combining different gene pools.

But Foye said that while he is impressed with Mathcad, he will not know how effective it is until two or three years from now. "When I use it, I'm just flabbergasted. But it takes about three years to get a horse up and running," he said.

In the meantime, Foye said he does not expect computers to replace common horse sense anytime soon.

"You have to remember that an idiot with a computer is still an idiot; he can just do more damage," Foye said.

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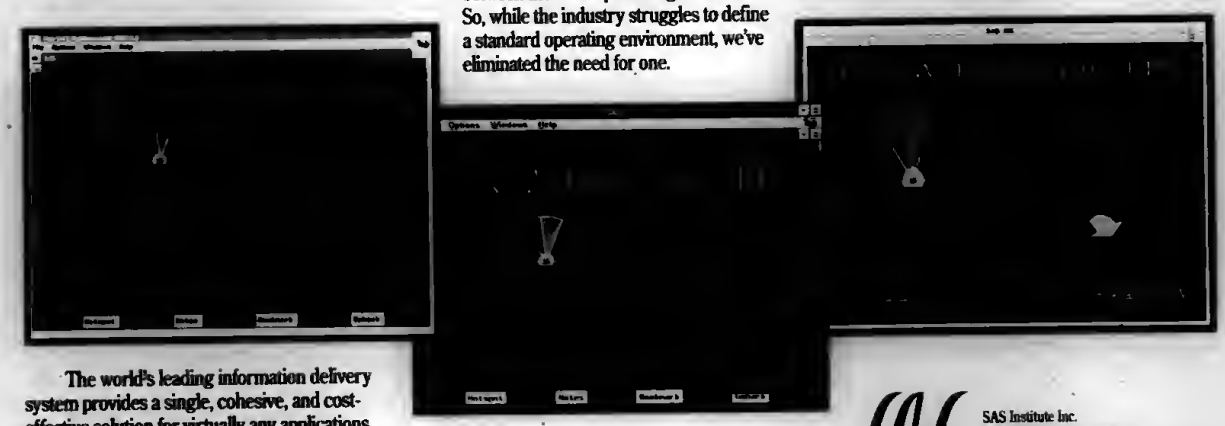

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Controlling remote software on Windows

By Christopher Lindquist

While remote-control packages for PCs have been around for years, the Windows versions have been something less than spectacular. Now Symantec Corp. has upped the ante with Norton PC Anywhere for Windows, an easy-to-use package that provides reliable remote control, file transfer and general communicatione functions under Windows.

PRODUCT TEST DRIVE

If your life, like mine, revolves around the PC you have at work, then there probably have been times when you needed a piece of information — a phone number, an address, a report — that was on the work PC. The only problem was that you were at home. Retrieving the information required getting into the car and driving to work.

Remote-control packages solved that problem for many people, allowing them to dial in and work on the remote machine as if it were on their local desktop. Such packages worked fine under DOS, but the Windows implementations were often unstable and slow.

PC Anywhere for Windows attempts to resolve the stability issue by functioning as a dedicated Windows package (instead of as an addition to the DOS version as it was previously).

The speed issue needs to be resolved in hardware. While PC Anywhere for Windows supports 2.4K bit/sec. modems, you will find yourself growing old waiting for the screen to repaint. The faster your modems, the better — with connection over a network being best of all.

Just like being there

The package allows remote users to run the host machine as if they were physically sitting at it. Everything is available to remote users, including the ability to blank the host screen and lock the host keyboard to prevent anyone else from using the machine while it is in session. Network users get the added benefit of a gateway that allows modem sharing on the host PC.

A Chat Window that allows users on both ends of a session to communicate could be a boon to support personnel. If a user is having a problem, the support technician could start a PC Anywhere session over the network or dial-up lines and walk the user through the problem without having to be there in person.

Security is handled via passwords for host system access as well as the ability to do call backs to the user's system. PC Anywhere for Windows can also be configured to disconnect users after a certain period of inactivity, reboot the system after a session or after a connection is lost or record the session for later playback. Sessions can also be logged to track use of the host system, including start/stop times and file transfers.

Easy retrieval

One of the biggest benefits of remote-control software addresses our first concern: getting at remote data. Moving files is extremely easy. PC Anywhere for Windows comes with a file manager that supports drag-and-drop file transfers between systems as well as the ability to delete files and create directories.

User beware

Some things to be careful about in PC Anywhere for Windows, as learned from a frustrating experience:

If you plan to exit Windows on the "host" system, be sure you have installed the resident DOS program that will allow you to retain control of the system. And if you set PC Anywhere to reboot the host after a session or lost connection, make sure Windows and PC Anywhere are configured to execute upon start-up. Failure to obey these rules can result in a trip to the office.

PC Anywhere for Windows also works as a quite functional communications program, allowing connections to electronic bulletin boards and other remote systems, file transfers using multiple protocols and support for a variety of terminal emulations.

The package comes on two disks with a pair of manuals: one is a user's manual and the other is dedicated to the extensive scripting language that allows entire sessions to be automated. Unfortunately, no form of script recording is included, so all scripts have to be entered manually, reducing the usefulness of the script language somewhat.

PC Anywhere for Windows is available now for a list price of $199 for a single-user license. Five-license LAN Complete Paks list for $599, and five-license LAN Host Paks, which allow only incoming calls, retail for $199.

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DOS utilities

CONTINUED FROM PAGE 41

party product. "DOS 6.0 utilities are OK for most people, but there's no way in the world they're going to get me to replace my own personal utilities," said Charlie Russell, system administrator for computer-integrated monitoring at New United Motors Manufacturing, Inc. in Fremont, Calif.

DOS 6.0's antivirus features — an implementation of an antivirus package from Central Point Software, Inc. — are also coming under heavy fire. In the recently released "Inside MS-DOS 6.0," the authors put the operating system's antivirus features through its paces. The result: In a scan of 1,590 viruses, Microsoft's antivirus scanner detected only 1,009 — or about 63%. Of the 1,009 it detected, it could not remove 978.

"I think you can say that it's not the sort of hit rate most places would find adequate," said David Stang, director of research at Washington, D.C.-based International Computer Security Association and co-conductor of the virus study.

A scan of several on-line forums showed users lambasting the scanner for being too slow and for having a clumsy interface. To make matters worse, Microsoft promises upgrades via its electronic bulletin board, but it does not promise they will be free.

DOS 6.0 utilities provide basic functions to people who may have had none in the past, one user said. "At least it gives people a little virus protection and a little backup," said Paul Ligeski, a programmer at Ann Arbor, Mich.-based Medstat Systems, which organizes the medical benefits programs of Fortune 200 companies.

Microsoft officials said they do not expect DOS 6.0 utility features to be all things to all people. "They are not designed to blow third-party products out of the water," said Brad Chase, general manager of MS-DOS. "They are there to give utilities to users who perhaps never owned utilities before."

Chase acknowledged that many third-party backup and antivirus products "have feature sets much stronger than DOS 6.0." He would say the same, however, for DOS 6.0's DoubleSpace compression feature, which he said is an integral part of the operating system.

How can IBM's OS/2 counter NT?

■ In a recent Computerworld phone poll, we asked readers to comment on what they feel IBM should do with OS/2 to counter interest in Microsoft Corp.'s Windows NT. Here's what they advised:

▶ IBM's OS/2 is suffering from a lack of interest because of its lack of accessibility.

"IBM should give away OS/2 in much the same way Microsoft gave Windows away," said Mark Chauvin at Tulane University Medical Center.

"IBM needs to flood the market, get it preinstalled on every system that can take it," added Steve Mathesius at Kaiser Implement.

▶ Callers also commented on OS/2's pricing structure.

"IBM needs to lower the price across the board. $249 is not reasonable for a first-time computer buyer, and a $99 upgrade will not attract many DOS and Windows users," Mathesius said.

▶ Because IBM does not provide evaluation copies to non-IBM resellers, Steve Aikens at PC Solutions in Clovis, N.M., said he will not recommend any operating systems to his clients that he has not fully tested himself. He also refuses to pay even dealer wholesale prices.

▶ Some OS/2 loyalists said IBM needs to educate users on the advantages of OS/2 over Windows NT.

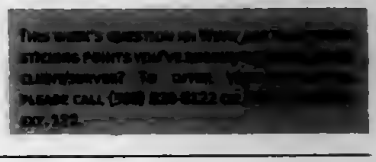
"OS/2 is a workstation environment, and NT is too bloated to even be considered one," said George Norby at Mercury Blueprint and Supply, Inc. in Las Vegas.

Another caller added that IBM should point out that OS/2 needs only 6M to 8M bytes of random-access memory and 20M bytes of disk space compared with NT's minimum of 12M bytes of RAM and 70M bytes of disk space.

▶ Susan Ackerman, president of Strategic Marketing and Research in Philadelphia, said IBM has to get more developers to write application software for OS/2.

▶ "Push very inexpensive programming languages to increase developer interest," added self-employed programmer Bob Kottas.

"Make sure all third-party developers are advertising," said Dan Marshall at New Century Associates.



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Alpha Software makes play for DOS users

By Michael Vizard
BOSTON

Looking to spark interest in database application development under DOS, executives at Alpha Software Corp. in Burlington, Mass., last week unwrapped Alpha Four 3.0 and called for a more realistic outlook concerning PC database platforms.

"There's no question that Windows is the future. But the real world still lives in DOS," said Selwyn Rabins, Alpha Software co-chairman.

Alpha Software, which claims to have a half-million users of its database, is making a commitment to DOS at a time when rival vendors are heavily touting their Windows offerings. Lotus Development Corp. has acquired Approach Software Corp. in Redwood City, Calif., while Microsoft Corp. and Borland International, Inc. have been pushing their respective Windows database products for the past year.

Rabins said that while his company has a Windows database project under way, most sites are not yet ready to absorb the incremental hardware costs needed to run Windows.

He claimed that it takes an Intel Corp. 1486-based PC with 8M bytes of memory to effectively run a Windows database. Yet most customers are just beginning to install 486 systems, with the majority of their systems being 386-class PCs.

As a result, Rabins said, programmers are discovering that while they can create applications on a 486, those applications cannot run on the existing installed base of PCs.

Richard Rosen, president of Rosebud Consulting, Inc. in Saugerties, N.Y., said his firm adopted Alpha Four because most of his customers do not want Windows systems yet and do not have the PC hardware to run Windows applications.

Rosen said his latest project consists of an order-entry application for a chain of liquor stores in New Jersey.

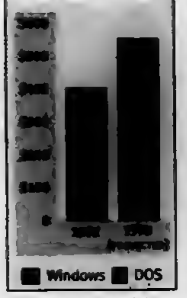
"I originally wrote the application in Microsoft's Access, but they didn't like the mouse. They wanted something that looked like what they were used to seeing on paper," Rosen said. The latest version of Alpha's relational database was introduced at the Database World exposition held here.

It features the ability to enter data in multiple database files from a single screen, real-time posting of data to external database files, automatic referential integrity, cascading and conditional look-up tables and the ability to design screens with scrolling windows that display data from linked databases. Priced at $495, Alpha Four is now shipping.

Growing new roots

Windows-based databases will double their revenue this year

WORLDWIDE TOTAL (REVENUE IN MILLIONS)



Source: Forrester Research, Inc., Cambridge, Mass.

In Brief

Simple expands memory cards

Simple Technologies, Inc., a memory card maker in Santa Ana, Calif., expanded its line of memory upgrade cards, coming out with 4M-, 8M- and 16M-byte cards for the Versa notebook from NEC Technologies, Inc. Pricing is $295 for the 4M-byte card, $495 for the 8M-byte card and $1,395 for the 16M-byte card.

VideoLogic unveils graphics products

VideoLogic, Inc. in Cambridge, Mass., recently announced several graphics products. It introduced Captivator, a video capture card for PCs. Captivator will ship at the end of this month and will be bundled with Microsoft Corp.'s Video for Windows and Macromedia, Inc.'s Action. Suggested retail price is $399 with the software, $349 without it. VideoLogic also introduced Mediator LC, which lets users transfer PC graphics to VCRs or TVs. Mediator LC was codeveloped with IBM and will have both companies' logos. Shipping now, it costs $599.

New Epson subnotebook

Epson America, Inc. introduced its ActionNote 4000 subnotebook, a 3.85-pound box based on the 486SLC/33 chip from Cyrix Corp. The subnotebook comes with an 80M- or 120M-byte hard drive and will ship in July at a price to be determined.

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Apple

ThinkPad plan

CONTINUED FROM PAGE 41

the advisory council panned the idea. IBM went back and is now redesigning the part, which is due out in the third quarter. The advisory council "has made a huge difference," said Bruce Claflin, general manager of mobile computing at IBM.

IBM's ability to react to suggestions has earned it the No. 5 spot in the notebook market for 1992, according to International Data Corp. numbers, and the company has a 7% share of the notebook market worldwide.

The current ThinkPad line consists of the new notebooks plus the 720 and 700 (monochrome and color versions of each) and the ThinkPad 710T pen tablet. The 300 notebook, manufactnred by Zenith Data Systems, has been withdrawn. The line, particularly the 700C and the 720C, represents the new IBM PC Co. at its best, building products with innovative technology that come to market in a timely fashion.

The ThinkPad 700C, for instance, offered the biggest display of any active-matrix color notebook and hit the market just as users began to buy color notebooks in droves. IBM followed sixth months later with the 720, which included a faster processor and support for Personal Computer Memory Card International Association (PCMCIA) cards. Of the new products, the subnotebook market has barely begun developing, and IBM added local bus video to the 350 notebook, something most vendors have yet to do.

Turning heads

All this product activity has analysts raising eyebrows.

"We're not five years into the market yet; what is IBM doing coming out with a product? They're so much more aggressive with the ThinkPads," said Jeffrey Henning, analyst at BIS Strategic Decisions in Norwell, Mass.

IBM officials conceded their tardiness.

"We were very late in portables, and we want to get ahead of the curve," Claflin said. He said this was why IBM came out with the subnotebook before the market solidified and put PCMCIA, still an emerging standard, into its products.

Backlog problems

But ThinkPad also shows the IBM PC Co. at its worst: waterlogged with demand. IBM PC Co.'s supply problems are not limited to ThinkPad — users said the low-priced ValuePoint PCs are harder to get — but at one point this year IBM had a $1 billion backlog on the product. While users such as Nelson said "things have opened up a bit, especially with the ThinkPads," the backlog remains.

Seybold said he thinks the 350 may ease IBM's back-order slate for its current ThinkPads by "spreading buyers among several different products."

While the market has reacted in frenzied fashion to the ThinkPad products, analysts said IBM still has a lot of room for improvement.

They point out that the ThinkPad 700 and 720 are bulky products that weigh more than many notebook-type devices. IBM said it is addressing these issues in part with the new 350 and 500 and that it will continue to expand the ThinkPad family.

"We want to be the undisputed leader in the mobile market," Claflin said. "Our first ThinkPads were focused on the high end, and these new products are to compete in the volume end of the market."

Claflin said that while IBM was late to market, "this area of the market is still wide open. We do not yet sleep soundly at night, but we are beginning to feel pretty good [about our position]."

Product shorts

Great Plains Software has released Version 7.0 of Great Plains Accounting, offering 91 accounting features and 106 features that affect all 16 core modules. Cost: $295 to $1,295. Great Plains Software, Fargo, N.D. (701) 281-0550. ... **PenMetrics, Inc.** has released FieldNotes, a geographic information system for pen, laptop and notebook computers that use Windows Pen Computing. An enhanced geocoding capability comes with the product. Cost: $895. PenMetrics, Corvallis, Ore. (503) 757-3076.

Microsoft Corp. has announced Microsoft Mouse Version 2.0 with hardware and software enhancements and a new design geared for both right- and left-handed users. Cost: $109 for the Serial Mouse and Mouse Port versions. Microsoft, Redmond, Wash. (206) 882-8080. ... **Clarion Software Corp.** is shipping the Clarion Database Developer Version 3.0, an upgrade to the Clarion Professional Developer 2.1, its database and application development tool for MS-DOS microcomputers. Cost: $995. Clarion Software, Pompano Beach, Fla. (305) 785-4555.

User Solutions has announced the Spreadsheet Scheduler, a set of template programs that are compatible with all popular spreadsheets. Cost: $199. User Solutions, South Lyon, Mich. (313) 486-1934.

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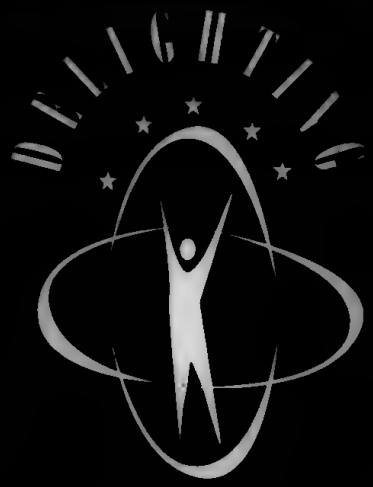

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GA-1304

Mac/Unix marriage takes off

By Jean S. Bozman

For the last several years, Macintoshes and Unix workstations have sat side by side on engineers' desks. In many cases, their use was driven by application alone: People used the Macintoshes for word processing and spreadsheets and the Unix workstations for designs in two and three dimensions.

Now, this separate but cordial coexistence seems about to change. By early 1994, both IBM and Apple Computer, Inc. will have shipped the PowerPC, a powerful reduced instruction set computing (RISC) architecture capable of running both the Macintosh operating system and Unix operating systems such as IBM's AIX. More immediately, new software interfaces that allow Unix workstations to host selected Macintosh applications under a Unix interface are starting to ship from Quorum Software Systems, Inc. in Menlo Park, Calif., and Sun Microsystems, Inc.

These technologies will soon allow users to run Macintosh and Unix applications on one machine — not two. And as the lines between Unix and the Macintosh become blurred, the prices of Macintosh and Unix workstations are expected to dip as powerful PCs challenge $5,000-plus Unix workstations.

As a result, users may get to dictate terms on their desktop machines. "I think what's happening is that people won't make a distinction if it's a Mac box or a Unix box or a PC box," said James Yip, a manager of technical services at Ernst & Young Canada in Toronto. "All they'll really care is that it runs the application they're used to."

Several ways to run Macintosh applications on Unix platforms

- Buy Macintosh interface software for your Unix workstation.
- Use Macintosh emulators on your Unix machine. This may slow performance.
- Wait for the Apple/IBM PowerPC to arrive in early 1994. The PowerPC will be able to host Macintosh applications on a RISC machine under the Macintosh operating system.
- Run Apple's [illegible] Unix operating system.

Yip said many of the 3,000 Macintoshes in his organization may turn into PowerPCs, starting next year.

In addition to running the Macintosh operating system, the Apple/IBM/Motorola, Inc. PowerPC will be able to run Macintosh binary code on a Unix/RISC platform, said Nina Lytton, president of Open Systems Advisors, Inc. in Boston. That will give it an innate performance edge over emulation technology that runs Macintosh code on top of a Unix operating system.

Lytton said that is important because some elements of the Macintosh interface simply will not appear when Macintosh applications run under a Unix software interface. Among them: the Macintosh finder, the trash can for deleting files and Macintosh-specific multimedia applications. Those will have to be ported to the PowerPC, Lytton said.

Mac-compatible

Earlier this month, Quorum Software Systems said it was shipping a Macintosh-compatible layer of middleware that hosts Macintosh applications on Sun and Silicon Graphics, Inc. workstations. And Sun announced this spring that it would market another Macintosh-compatible interface.

By July, Echo Logic, Inc. in Holmdel, N.J., will sell its FlashPort binary-to-binary translator to independent software vendors porting their Macintosh programs to PowerPC, she said. Apple has said it will port its Macintosh toolbox to Unix.

Meanwhile, some users at large Macintosh and Unix sites said they can wait for the PowerPC.

"Apple will be selling their operating system, and the hardware is becoming a commodity," said Mike Bailey, a systems integrator at Lockheed Missiles and Space Co. in Sunnyvale, Calif. At Lockheed, many Unix users turn to Macintoshes to access corporate electronic mail or to create documents shared with other departments.

Neither interfaces nor emulators will have the same impact as the PowerPC, Bailey said. Its shipment will trigger a wave of Macintosh-on-Unix ports, he predicted.

FEMA disaster recovery system goes high-tech

By Michele Dostert

In the aftermath of Hurricane Andrew, federal management agencies were roundly criticized for responding too slowly to the crisis. Emergency workers reported spending five hours traveling to and from a site, then having their reports delayed another five hours by overloaded fax machines in Washington, D.C. On top of that, agencies found their computers and applications could not talk to one another, causing a huge backlog of unprocessed data.

The Army Corps of Engineers Emergency Management Division hopes to do better next time. Early this month, the Federal Emergency Management Agency (FEMA) sponsored its annual week-long simulated disaster drill, predicated on an imaginary earthquake of 7.5 on the Richter scale hitting a city at 7:30 Monday morning. During the drill, the Army Corps of Engineers tested a new disaster management information system using notebook computers, Notes-based applications and microwave/satellite data hookups to provide instant communication between relief workers and support offices.

"To expedite damage assessment and relief supplies and personnel, we have to have immediate two-way communications between field workers and support personnel even though the communications infrastructure is gone," said Mark Verke, chief of the Army Corps' Emergency Management Division.

Well-equipped

The first line of response in the new system is disaster workers equipped with notebook computers and digitized video and still cameras. In the simulated disaster, pictures, voice and data were sent via cable or wireless link to recreational vehicles (RV) equipped with power generators, PCs and videoconferencing systems from PictureTel Corp. in Danvers, Mass.

The voice, data and pictures were compressed and sent, via two-way AirLink wireless modems from CyLink Corp. in Sunnyvale, Calif., to a mountaintop earth station set up by CyLink. The data then traveled to local offices and, via satellite, to remote offices nationwide.

"We were trying for a wireless radius of 30 miles, but with the relay station boosting the signal, we got video from miles away," said Tom Ruff, government services manager at PictureTel.

As the RVs traveled from collapsing dam to crumbling highway overpass to flattened airport, emergency officials saw real-time pictures of the structures and could communicate with camera operators. "All of the microwave radio and satellite links worked perfectly," Verke said, "which was a good thing because the cellular modems we had planned to use for backups wouldn't work at all."

Disaster relief workers *take part in a simulated earthquake*

The Army Corps of Engineers also tested new disaster applications and computer networks. All of the notebook and desktop PCs in the RVs were equipped with tailor-made Notes applications with customized icons for things such as power, telephone, fires, water and collapsed buildings. Data was sent first to a local PC server running OS/2 and then mirrored to servers in Sacramento, Calif., and Washington, D.C., providing redundant information storage.

"Via our servers, we could instantly access detailed maps stored on government computers in Hanover, N.H., [and] use the [Windows] paint box to annotate them with locations of fires, relief hospitals and the like and then store them on our server. Whoever next called them up would have accurate, up-to-date information immediately," Verke said.

Participants in the drill, while not committing themselves to the Army Corps of Engineers' new system, were impressed by it. "If everyone had been on this system during [Hurricane] Andrew, we could have provided relief 20 times faster, better and cheaper," said one FEMA official who asked not to be identified.

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Cardiac monitors speed data delivery, diagnosis

By Nell Margolis
OMAHA

Putting a whole new spin on the term "Heartland," an ultrasound cardiography system is just now sprinting beyond beta-test status at the University of Nebraska Medical Center. It gives doctors at the center's cardiology unit a real-time look at what is going on in the heart of a remotely located patient, said cardiology engineering project manager Alan Michels.

The recently launched cardiography system, the latest in a barrage of information systems-enabled health care from the university, weds Hewlett-Packard Co.-engineered diagnostic scanner technology to an analysis workstation tailored to the health care field. The workstation was designed by Freeland Systems, Inc. in Broomfield, Calif.

Digital data is transported instantaneously across US West's Switchnet 56 lines, allowing physicians at the university to transmit data at 56K bit/sec., Michels said. What is more, he said, the doctors use a dial-up service provided by US West rather than leased lines — a per-use rather than package deal that keeps costs down for the medical center's rural hospital affiliates.

For patients who need to see a cardiologist, this is no small step, Michels said.

"Many of the rural hospitals or health centers have scanners," he noted, but "few have the specialty expertise" to interpret the data and quickly act in the patient's best interest.

Through the ultrasound system — a wholly noninvasive device that is simply stuck onto the patient's chest — a cardiologist can get an on-line look at "what's beating in the heart and what's not," according to Michels.

Even more important, specialists can spot in seconds signs of a heart attack in progress. Moreover, the consulting specialist's advice, relayed in seconds to the remote location across the medical center's network, can stop the heart attack before it hits.

This critical capacity joins a long list of IS-enabled health care initiatives afoot at the university medical center, all of which were among the most hotly talked about items at the 2nd Annual National Medical Information Networking Conference held here earlier this month.

Others include the following:

- Launched in 1991 to serve regional physicians, the Synapse health information network connects and offers a broad range of health data access to some 400 doctors, nurses, medical students and pharmacists at 150 sites in 60 cities across Nebraska and Iowa, according to Synapse coordinator Robin Meter.
- The Synapse electronic-mail system taps into a statewide system, giving its users access to some 4,000 individuals in all levels of state government. Last week marked the successful end of an approximately two-month-long project to convert Synapse E-mail from IBM's Professional Office System to OfficeVision.
- An aggressive telecommunications initiative also kicked off in 1991 has resulted in a spate of applications, including the ultrasound addition, a bedside monitoring system and a digital recorder that monitors heart waves of patients while they are at home going about their normal activities.

The crux of the center

Meter said the center relies on a frame-relay network that encircles Nebraska. The network, Meter said, is the fruit of the labors of a state-facilitated consortium of both state and private health providers designed to wire Nebraska.

Such a network makes sense in the sprawling state, where "it makes sense to start thinking in terms of transporting information rather than patients," Michels said.

But the medical center is also prodded by the as-yet unknown mandates of the Clinton administration's federal health care plan, the first pass of which is due out within the next several weeks. For instance, the center is negotiating with Seattle-based Phamis Corp. to co-develop an electronic medical record system, said Jim Bahansky, associate director of computing services at the center.

The center's criteria for the new system, Bahansky said, include "tying both in-patient and out-patient records into the same database and creating flexible tools that will let us introduce new technology as it emerges."

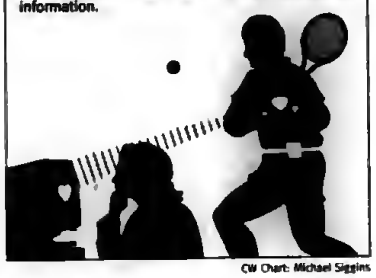
The center also wants the system to provide an engine for building rules-based expert systems that could pitch in on matters such as managed care accounting, quality assurance on the clinical and pharmaceutical side and teaching, Bahansky said.

Healthy savings

Cardiac monitors tied into the University of Nebraska Medical Center's cardiac monitoring station can monitor up to 64 beds simultaneously, said engineering project manager Alan Michels. This lets the center's specialists be at its 108 monitored bedsides with the aid of two monitors and one PC. In prestation days, he said, it would have taken 25 monitors and five technicians to do the job. Net savings to the hospital: 80% of the equipment cost and 80% of the technician cost.

Heart-to-heart monitor

The University of Nebraska Medical Center's digital Holter recorder monitors heart waves of patients as they pursue activities. The patients wear electrodes on their chests and a belt-based recorder. A remotely located cardiac specialist (often hundreds of miles away) catches the waves in real time, 24 hours a day; previously, it took doctors two to six days to receive and process the information.



CW Chart: Michael Siggins

Franco Vitaliano

Why not NOS?

To NOS or nosh? Do you take one quick trip to the centralized systems supermarket or meander through scattered files and services? Like an individual's appetite, the answer is a matter of organizational taste and user lifestyle.

Network operating system-based systems such as Novell's NetWare, which grew up in the limited world of MS-DOS PCs, served valuable roles. They provided fast PC file services and imposed minimal MS-DOS memory requirements for running NetWare client drivers.

In addition to centralized file/print services, the network operating system can take responsibility for handling communications between diverse clients such as Macintoshes, MS-DOS and Unix.

In contrast to PC users, folks growing up in the distributed Unix workstation world always had megabytes of memory to play with, 32-bit operating systems, built-in TCP/IP and the rest of the network goodies, such as Network File System (NFS).

NFS allows users across heterogeneous systems to access a file anywhere on a LAN without having to know on which machine that file may reside. NFS is now licensed and marketed by almost 300 vendors. NFS implementations exist for MS-DOS, multiple Unix flavors and DEC's VMS.

But the NFS drivers and their associated TCP/IP stack will cost your PC between 150K and 200K bytes of RAM. Memory managers can squirrel away this stuff, and many of the PC NFS vendors are smart enough to automatically load their drivers into high or expanded memory, but there is no free lunch in the PC world.

If you want the flexibility for every machine to act as either server or client, need full distributed connectivity and desire a flattened organizational structure, then TCP/IP and NFS are right for you. But if your shop has mostly PCs, has a very hierarchical world view and serves users who require only occasional access to Unix (and vice versa), then NFS running on NetWare 3.X or 4.0 or NetWare for Unix makes more sense.

There's no free lunch in the PC world

Static equation

Of course, the advent of a more robust Windows, Windows NT, OS/2, Novell UnixWare, cheap processors and gobs of RAM will shortly rework the entire PC equation. NFS and TCP/IP can easily play in these new environments.

Moreover, the notion of loading up a single centralized server with everything is about to be rendered obsolete by the advent of distributed objects. With distributed objects, you should be able to easily plug in and snap out specialized network services such as fast file systems. Vendors will then be able to concentrate on producing the fastest and most efficient servers.

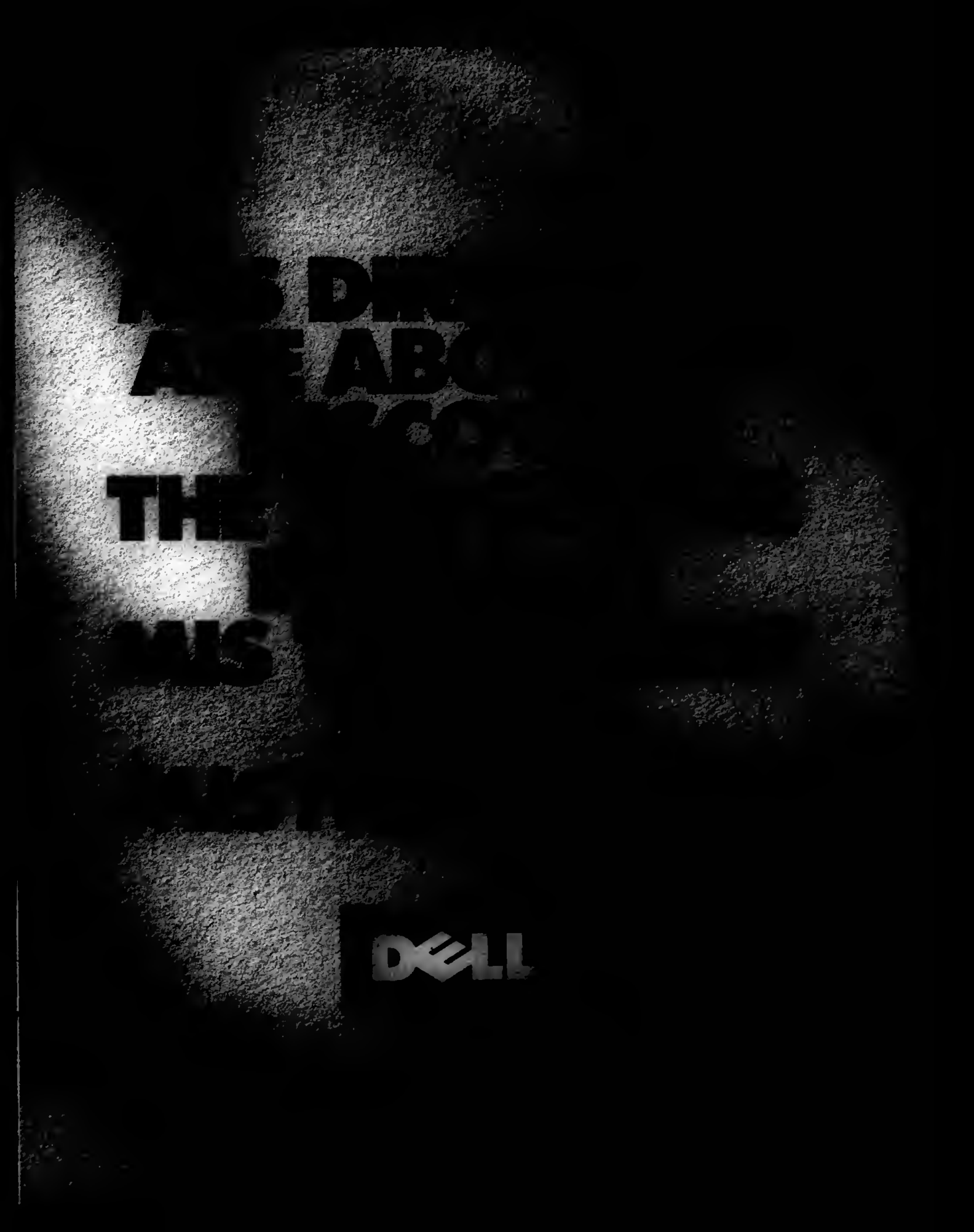
And organizations will be able to seek out the best cost/performance distributed object module in any particular service category.

New systems such as Santa Clara, Calif.-based Network Appliance Corp.'s FAServer for NFS clearly mark this upcoming network sea change. The 486 FAServer strips out much of the Unix operating system overhead, and its lean code does speedy reads and writes out to its several gigabyte RAID subsystem. This box delivers the goods for approximately $20,000.

It is a short conceptual jump to envision a network object wrapper being placed around the FAServer. You could then ping and unping it from various types of networks at will. With more specialized "appliances" like this and distributed object services, these new systems will soon mitigate against buying a centralized, overburdened network operating system.

Bottom line: in about two years, NetWare and its ilk will reach a historical crossroads. The big, overburdened network operating system server may go the way of the mainframe.

Vitaliano is a Boston-based writer specializing in distributed computing issues. He can be reached by MCI Mail at VITALIANO.


DELL

Pathworks to get license management

By Craig Stedman
ATLANTA

Digital Equipment Corp. is building mandatory software license management capabilities into new versions of its Pathworks local-area network software but has not yet figured out a method for migrating users who are unsure about the extent of their existing licenses.

Earlier Pathworks versions did not include any license-checking features, making it difficult for both DEC and its customers to keep track of how many licenses were being used within networks. Pinpointing PCs that hold valid licenses has also been unwieldy, according to DEC and users alike.

DEC is adding its License Management Facility (LMF) to Pathworks in part to ensure that it gets paid appropriately for licenses, a common concern among software vendors.

Users were somewhat sympathetic but reacted warily to word that they would have to implement the license management capabilities.

Unknown quantity

"At this point, we have no idea how many Pathworks licenses we own," said Maurice Daniels, network administrator at the Manitoba division of Inco Ltd., a Sudbury, Ontario, nickel mining and smelting company. "We asked DEC, and they don't know. It's a very annoying thing."

"Even if they came in here and audited me, how are they going to know?" asked another Pathworks user, who requested anonymity.

Finding a way to move users to the upcoming Pathworks releases with DEC's LMF "is a fun question that's been consuming a lot of our time the last few months," said John Gorczyca, product manager of the version of Pathworks based on Novell, Inc.'s NetWare.

"I don't have anything specific to tell you today, but I can tell you there will be a solution," he said at the Digital Equipment Computer Users Society spring conference here.

LMF will be included in the NetWare-based Pathworks, which Gorczyca said should finally ship this summer, and Pathworks 5.0, a version built around Microsoft Corp.'s LAN Manager technology that is being promised for shipment by year's end.

"I'm not thrilled because license management is a pain," said Steve Ruger, MIS manager at Smith Industries Ltd.'s aerospace operation in Malvern, Pa. "It's more time shuffling papers and keeping track of numbers, and it doesn't add to the functionality of our system. It's just there mainly for DEC's convenience."

For the first time with the new Pathworks releases, DEC also plans to offer concurrent-use server licenses similar to the NetWare licensing model. However, PCs licensed through a server would have access only to basic file and print services and could not use any other Pathworks client applications.

Continuing with individual client licenses would also be more cost-effective for PCs that need to access multiple servers, said Laura Spear, Pathworks 5.0's marketing manager. The server version could be accessed by up to 256 PCs at a time, with no limit on the number that could be supported altogether.

Adobe plans Acrobat OCR font technology

By Michael Vizard
NEW YORK

Adobe Systems, Inc. in Mountain View, Calif., last week said it intends to deliver within the next year optical character recognition technology that will allow users to scan documents into an electronic format that is compatible with the Portable Document Format (PDF) in its Acrobat font technology.

Unveiled here last week, Acrobat was designed to allow users to read and annotate documents created using Postscript files regardless of whether the document was originally created on a Windows, Macintosh, Unix or DOS platform [CW, June 14].

To take that metaphor one step further, Adobe Chief Executive Officer John Warnock said his company's next mission will be to bring all the legacy documents currently stored on paper into electronic document systems. That effort will be based on technology Adobe acquired last year when it purchased OCR Systems, Inc.

In addition, he said, Adobe will shortly add support for device-independent color to PDF, and it plans to give users of its Illustrator software the ability to edit PDF files directly.

"The lack of device-independent color is a short-term phenomenon," Warnock said.

Pricing for Acrobat Reader, which allows users to read a PDF document, is $40 per copy in 100-pack units. Pricing for Acrobat Exchange, which allows users to read and annotate documents, is $146 per copy for 100-pack units. Acrobat Distiller, which converts a Postscript file to PDF, is $695.

Acrobat, which has been beta-tested at more than 400 sites, is currently available on Windows and Macintosh platforms. Support for DOS and Unix is scheduled for later this year.

In the same time frame, Adobe also plans to deliver full-text search capabilities. A translation utility for linking PDF files to documents created using the Standardized General Markup Language is planned for the first half of 1994.

Supporting cast

Vendors endorsing Acrobat include Alpha-Graphics, Inc., Business Unit, Datawave Technologies, Elixir Technologies, Knight-Ridder/Press-Link, Eastman Kodak Co., Lotus Development Corp., Multex Systems, R. R. Donnelley & Sons Co., Tech Data Corp. and Ventura Software, Inc.

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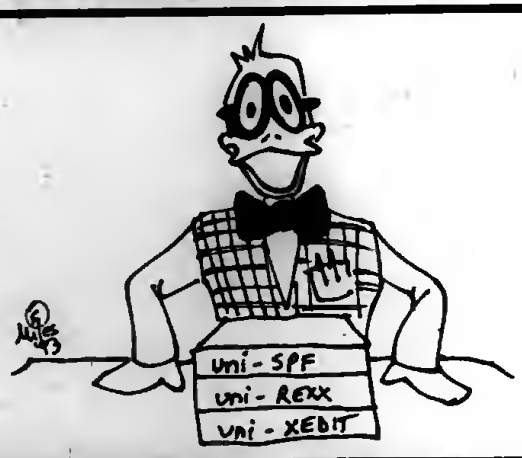

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In Brief

Netpower debuts

Former Mips Technologies, Inc. Chairman Robert Miller's start-up company became official last month when Netpower, Inc. held its "coming out" above the din at Comdex/Spring '93. As expected, the workstation company said it will start shipping Mips-based boxes running Microsoft Corp.'s Windows NT in the fall [CW, May 17].

RAID for PC LANs

Hewlett-Packard Co. has announced its first fault-tolerant redundant arrays of inexpensive disks (RAID) product for the PC-based local-area network market. The array features an Extended Industry Standard Architecture-based interface, 4M bytes of on-board cache, Small Computer Systems Interface-2 performance and variable RAID support. Pricing starts at $8,849. The HP Disk Array supports servers from multiple vendors, including Compaq Computer Corp., AST Research, Inc. and Dell Computer Corp., and it is compatible with Novell, Inc.'s NetWare, The Santa Cruz Operation's SCO Unix, OS/2 and MS-DOS. Support for Windows NT is planned.

Informix ports to Apple

Informix Software, Inc. said it will port Informix-OnLine, Informix-SE, Informix-4GL and other relational database tools to Apple Computer, Inc.'s Workgroup Server 95 system. Informix products running on Apple's A/UX Unix operating system are due out late this year, an Informix spokesman said.

Lotus ups training

Lotus Development Corp. has launched Lotus Authorized Education Centers, a network of third-party companies that will provide Notes and CC:Mail training.

Embarc adds MCI Mail

In the latest in a series of interconnection agreements, Motorola, Inc.'s Embarc has been connected to MCI Mail. MCI and Motorola announced last week. With the connection, Embarc subscribers can receive MCI Mail messages in some 220 U.S. and Canadian cities. In late May, Embarc signed a similar pact with WorldLinx Telecommunications, Inc., the provider of Canada's largest public electronic-mail service.

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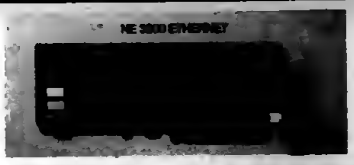

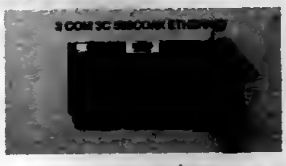

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[redacted]

LAN software

Object Design, Inc. has released the Object Design NetWare Loadable Module (NLM) Server, an object-oriented database for Novell, Inc. NetWare networks.

According to the company, the product was designed to simplify the development of new classes of distributed applications. NetWare users can develop applications that distribute and manage data, providing access to advanced services for imaging, multimedia, document management and groupware.

The ObjectStore NLM Server is accessible through an assortment of networking protocols, including native IPX/SPX and Transmission Control Protocol/Internet Protocol.

A developer license costs $7,500, and an end-user runtime license costs $2,250.

▶ *Object Design*
1 New England Executive Park
Burlington, Mass. 01803
(617) 270-9797

The Enterprise Systems Division of Apple Computer, Inc. has announced full support of Transmission Control Protocol/Internet Protocol (TCP/IP) for its Data Access Language (DAL) server software products.

According to the company, TCP/IP users can now access data on any Apple DAL-supported server from a DOS/Windows client or a Macintosh.

The DAL Server for MVS TCP/IP was also announced. Through TCP/IP, this software product enables Windows and Macintosh PCs with DAL client software access to IBM's DB2 relational database manager.

Prices for the DAL Server for MVS TCP/IP range from $35,000 to $50,000, $6,000 to $12,000 for the DAL Server for VAX/VMS and $4,250 to $20,000 for the DAL Server for Application System/400.

▶ *Apple Computer*
20525 Mariani Ave.
Cupertino, Calif. 95014
(408) 996-1010

Cheyenne Software, Inc. has released Arcserve 5.0 for NetWare-Windows Edition.

Arcserve 5.0 is client/server backup and recovery software for single-server or large multiserver Novell, Inc. NetWare enterprises.

Enhancements include a "point and click" Windows interface plus an improved one-step backup command called Quick Start. Tape cascading, parallel streaming and stacker and changer support are other features incorporated into the product.

Pricing begins at $395.

▶ *Cheyenne Software*
3 Expressway Plaza
Roslyn Heights, N.Y. 11577
(516) 484-5110

Workgroup software applications

NCR Corp. has introduced ProcessIt, a set of process management software.

ProcessIt was created to assist users to design, implement, execute and manage mission-critical business processes, the company reported. To manage work flow throughout the enterprise, ProcessIt provides a suite of Windows-based tools.

An advanced database-oriented workflow engine is employed to automatically route work based on a company's policies and procedures. ProcessIt uses graphical user interface-based tools to implement, measure and alter processes without affecting work in progress of existing applications, the company said.

A typical 30-user configuration of ProcessIt costs about $1,245 per user.

▶ *NCR*
1700 S. Patterson Blvd.
Dayton, Ohio 45479
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*Manufacturer's suggested retail price is $425.

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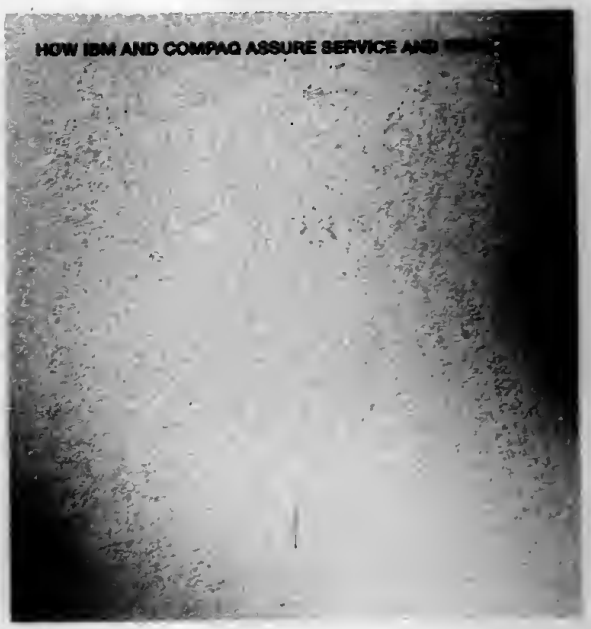

As any MIS Director will attest to, it's not hard to get "assurances" from a computer company. But what's to keep those assurances from vanishing into thin air?

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Elisabeth Horwitt

Middleware needs PR

What do you do if you think you've got a really nifty product — something that will solve a lot of the stubborn, sticky problems associated with multivendor distributed computing — but you can't explain to your potential customers what's so great about it?

That's the problem facing the message-oriented middleware (MOM) consortium, a seven-vendor body that includes feisty little companies such as PeerLogic, Horizon Strategies and Covia, as well as the more august IBM and DEC.

What it is

Middleware can be loosely defined as software that helps distributed applications communicate across dissimilar computing and networking environments. Many such products consist of gateway software that translates between, say, SNA and TCP/IP or OS/2 and Unix, plus underlying housekeeping services such as error correction, acknowledgments and transaction logging. Running over all these are APIs that ideally enable developers to write one set of applications that work across many environments.

MOM, unlike its remote procedure call (RPC)-based cousins, installs a message queue at each system. This means that system A can go ahead and send a request for data or the results of a job to system B without setting up a session first. If system B is otherwise occupied, the message waits in B's queue until B is ready. If system B or the network happens to be down, the message waits in A's queue until it can be sent.

As a result, analysts say, MOM is great for interconnecting across the enterprise multiple systems that need to communicate once in a while over telecom links that may occasionally go down. RPC-based middleware works well

Horwitt, *page 64*

Users leery of SNA internet

By Elisabeth Horwitt
NEW YORK

Information systems managers who went to a "New SNA" conference recently in search of tips, strategies and products to help them migrate to local-area network internetwork backbones came away frustrated by vendors' conflicting, proprietary product strategies.

Randall Murphy, an IS manager at the Lake County government offices in Waukegan, Ill., spoke for many when he called the decision process for Systems Network Architecture/LAN internetworking a mine field.

"The idea that everything is open and easy to interconnect is a myth. Users are getting locked into proprietary products, and now that is backlashing at the vendors," Murphy said.

Now users are saying, "We won't play until you prove to us" that a given SNA internetworking feature works as advertised, according to Murphy.

"I come from a mainframe perspective, and I'm not comfortable doing SNA over [Transmission Control Protocol/Internet Protocol] until [TCP/IP internetworking] has the consistent, predictive service levels my customers are used to," said John Gagnon, a technical adviser at Fidelity Investment and Network Service.

Even with the right products, the nature of internetworks precludes IS managers from having total control over their SNA links, which makes many managers nervous.

"I was interested in Proteon's product, which is supposed to guarantee 30% availability to SNA traffic, but if TCP/IP users are screaming for bandwidth, my 30% may go anyway," Gagnon said. "Before, I had 100% [of the bandwidth] for SNA. Now it's a matter of trust."

Read the fine print

Leading router vendors said they have solved common SNA internetworking problems. InterLab's caveat: Test before buying.

Problem: Bursts of LAN traffic can bump SNA sessions off the line.

Solution: Prioritize SNA traffic above other types or guarantee a certain percentage of bandwidth to SNA traffic.

Problem: SNA sessions tend to time out when going across multihop router paths.

Solution: Terminate polling locally, handle transmission of SNA traffic over the internetwork separately.

Problem: Unlike TCP/IP, traditional SNA does not support dynamic rerouting of packets en route to avoid traffic jams.

Solution: Encapsulate SNA inside TCP/IP or wait for IBM to ship APPN with High Performance Routing.

More than a stack

At least router vendors are no longer treating SNA as "just one more protocol stack" to be routed, as they did at last year's conference, said Kevin Tolly, president of InterLab, a Sea Girt, N.J., consulting and network testing company.

In the past year, the major internetworking vendors have announced products to address the more prominent SNA internetworking issues.

However, "there's no way of knowing whether a vendor spent months or years developing a feature," or whether it has any glitches, without thoroughly testing it, Tolly said (see box).

For example, InterLab recently tested a prioritization feature that is said to guarantee SNA the bandwidth it needs to avoid session time-outs. InterLab discovered that Cisco Systems, Inc. and Wellfleet Communications, Inc. routers treat all bridged traffic as one protocol, which means that NetBIOS and SNA can occasionally end up fighting for the same bandwidth.

One "bright light in a dark environment" is growing support by prominent router vendors for IBM's Data Link Switching (DLS) protocol

SNA internetworking, *page 62*

Network to help veterans fight war on home front

Linking shelter computers will coordinate services, keep track of veterans' histories and movements

By Stephen P. Klett Jr.
BOSTON

With help from Racal-Datacom, Inc., The New England Shelter for Homeless Veterans recently embarked on a pilot project to establish a state-of-the-art nationwide network aimed at integrating the country's more than 200,000 homeless veterans back into society.

The shelter, which hopes to have a national network in place by year's end, expects to go live with its own local network this month.

The first step toward establishing this national network is connecting the shelter's mishmash of donated computer equipment.

Racal-Datacom donated two INX 5000 intelligent hubs and designed for the shelter a network topology that it will help implement. The network infrastructure is based on a fiber-optic backbone, and the INX hubs provide Ethernet connectivity to allow communications with local social service agencies.

The shelter has a "vision, and we are providing the basic infrastructure and network engineering to get this vision up on its feet and running," said Jim Norman, president of Racal-Datacom.

Sister company Racal-Interlan has donated 60 network interface cards to connect the shelter's PCs to the Ethernet-based local-area network. The INX hubs and interface cards are valued at approximately $33,000.

The 10-story, nonprofit shelter uses its computers to help coordinate medical and social services with local agencies, list job and housing opportunities and maintain a client database.

The shelter's list of equipment includes 286 and 8086 PCs from AT&T and IBM, two file servers from Banyan Systems, Inc. running the Vines network operating system, an Aster 350 minicomputer from NEC Corp. and two laser printers from Hewlett-Packard Co.

The PCs are used mainly for data entry and processing and for the shelter's Automated Accounting Job Training program, which includes classes in accounting, Lotus Development Corp.'s 1-2-3, word processing, resume writing and general computer skills.

The shelter's computer systems currently suffer from isolation. For example, the computers in the training room on the first floor are not connected with the computers on the ninth floor, and there is no direct link to outside services such as Veterans Administration hospitals.

According to Ken Smith, executive director of the shelter and a Vietnam veteran, this makes it extremely hard to track veterans from shelter to shelter. For instance, Smith said, traffic at the shelter is already up 20% from the winter. He said the uptick is caused by homeless clients migrating from southern locales to New England for

Veterans, *page 62*

HP to enable low-cost Ethernet-only routing

By Joanie M. Wexler
PALO ALTO, CALIF

■ Hewlett-Packard Co. recently outlined plans to fill an internetworking niche with two low-priced local routers designed to help companies economically segment Ethernet local-area networks for better performance.

Segmentation — creating more LANs with fewer users on each — is a common tactic for quickly relieving network bottlenecks as users consume increasing amounts of bandwidth. However, with each new segment comes the need for another internetworking device.

HP said it will ship next month a four-port, $7,500 Ethernet-only router, as well as a $12,500 version that includes a Fiber Distributed Data Interface (FDDI) link. The FDDI option targets companies looking to speed up throughput of internetworked, 10M bit/sec. Ethernet traffic by aggregating it on a 100M bit/sec. FDDI backbone "highway."

The aggressive prices mean that Michael McEwen, manager of information systems at Ahlstrom Pyropower, Inc., an engineering and construction company in San Diego, can probably afford to bullet-proof his campuswide Ethernet by installing redundant routers at each internetworking juncture.

"Reliability is much more important than price," McEwen said, explaining that he has a corporate mandate for his network to experience no more than one outage for no longer than two hours each year. "I'd be willing to pay twice as much [as $7,500] for a router I can count on, so I'll probably buy two for hot backup," he said.

Performance increases

McEwen runs centralized, redundant Wellfleet Communications, Inc. routers as a collapsed backbone for linking his internetwork's population of mixed Ethernets and Token Rings. He said he ran his own internal performance benchmarks on the new HP devices and that they yielded a 30% to 40% performance improvement over comparable Wellfleet models for supporting dumps of Ethernet traffic.

This is despite the fact that HP router platforms all run Wellfleet routing software.

McEwen added that he will likely look at HP's FDDI version because the company will soon have to segment its 100 Unix nodes from its 200 PC desktops. However, the company is not running FDDI today, he said.

HP drew price comparisons between its routers and similar models from Cisco Systems, Inc., 3Com Corp., Proteon, Inc. and Wellfleet, positioning HP's products at prices up to 60% less expensive. However, the competing devices all included some number of wide-area network ports, while the HP routers have LAN-only connections, acknowledged John Vega, HP product marketing manager for routers.

In addition to introducing two routers, HP slashed prices on several of its existing bridges and routers by 16% to 24%.

The HP local routers support five common protocols: TCP/IP; Novell, Inc.'s IPX; Apple Computer, Inc.'s AppleTalk II; Digital Equipment Corp.'s DECnet IV; and Xerox Corp.'s XNS.

Also, most of those products, including the Cisco 4000, Wellfleet Link Node, Proteon CNX 500 and 3Com NetBuilder II, are based on modular designs, meaning that users buy a generic chassis and then outfit it with the LAN or WAN interfaces that their network designs require.

This jacks up their price for giving users more flexibility in customizing their equipment.

Fixed configurations, such as HP's, indicate that "you're competing at the low end, and I can see the niche where this will fit," said Fred McClimans, director of local area communications research at Gartner Group, Inc., a consulting and research firm in Stamford, Conn.

McClimans explained that he views the inexpensive Ethernet routers as a move to fend off competition from the LAN switching vendors, such as Kalpana, Inc., in low-end Ethernet products.

HP's internetworking divisional general manager Carolyn M. Ticknor, however, said the company is attempting to allow users to buy only what they need, rather than supplying "products that are all things to all people."

Veterans

CONTINUED FROM PAGE 61

the summer.

A national network connecting LANs located at more than 50 homeless veterans' shelters across the country would make it possible to track veterans' movements, Smith said. This would give the shelter access to each client's history to determine exactly what kind of help was needed, such as counseling or treatment for substance abuse or post-traumatic stress disorder.

But the biggest benefit the network will provide, Smith said, is to help restore veterans' identities.

"Information management is the key to homelessness. . . . The homeless do not have an identity," Smith said. "Information management helps restore their identity by helping restore things they've lost, such as their driver's license."

The shelter is on course to have its administration/accounting departments on the ninth floor connected via Ethernet with its training rooms on the first floor by the end of this month, according to Bob Herlihy, business manager at the shelter. Herlihy said the shelter plans to connect to shelters in other states before year's end.

Once a national network is established, Herlihy said, veterans' shelters will give homeless veterans a bar-coded identification card to present each time they enter one of the shelters on the network. The card will allow security officials at each shelter to immediately direct the individual to whatever services may be needed.

SNA internetworking

CONTINUED FROM PAGE 61

as a de facto standard, Tolly said. DLS handles all of the issues around mixing SNA and LAN traffic, such as prioritization, congestion and flow control.

A group of vendors is now working with IBM on an enhanced DLS that will then be proposed to the Internet Engineering Task Force standards body.

In the meantime, however, many large SNA shops are struggling to hammer out a viable SNA internetworking strategy from the proprietary hodgepodge of products now available.

The Chase Manhattan Bank NA "faces the same issues as everyone else: We have a multiprotocol environment that we're trying to scale to two or three" protocols on the internetwork, said John Jobity, a senior engineer at the bank.

Chase is considering tunneling or encapsulating SNA inside TCP/IP as a way of cutting down on total internetworking protocols, Jobity said. The company is also evaluating Advanced Peer-to-Peer Internetworking, a protocol originally proposed by Cisco that would allow SNA devices to communicate over a TCP/IP backbone.

In contrast, First Security Information Technology, Inc. is leaning toward IBM's Advanced Peer-to-Peer Networking (APPN). It chose 3Com Corp. over Cisco, partly because 3Com had a better relationship with IBM, said technical analyst Ken Moerman.

"I came to this conference partly to see if we should buy Sync Research, Inc. boxes to convert SDLC to LLC, or wait and do APPN or do encapsulation," Moerman said.

3Com offers a class-of-service option that "they say can handle reliability and prioritization of SNA, which is a big concern with us," Moerman said.

Gateway manages SynOptics hubs

By Elisabeth Horwitt
SANTA CLARA, CALIF

SynOptics Communications, Inc. has announced a gateway said to enable Simple Network Management Protocol (SNMP)-based systems to manage SynOptics hubs over an IBM Systems Network Architecture (SNA) backbone.

The product addresses companies that want to manage hub installations at sites not yet equipped with Transmission Control Protocol/Internet Protocol (TCP/IP) links, the vendor said. TCP/IP is the protocol by which SNMP management systems communicate with managed devices.

SynOptics' SNMP Transport Gateway is OS/2-based software that takes SNMP management data from SynOptics' intelligent hubs and encapsulates it into IBM Advanced Program-to-Program Communications packets. The packets can then be sent over an existing SNA backbone to a system running SynOptics' Optivity network management software.

Priced at $2,495, the product is scheduled to ship in October.

The product represents the first fruit of SynOptics' alliance with Elcon Technology Corp. Also in the works are SNA features for SynOptics hubs, including the ability to convert IBM Synchronous Data Link Control traffic into Logical Link Control packets that can run over local-area networks. SynOptics' rival in the hub and network management arenas, Cabletron Systems, Inc., is providing similar capabilities through an alliance with Sync Research, Inc.

Still in question, however, is how and when SynOptics and Cabletron plan to provide SNMP management of their hubs' SNA components.

Cabletron announced earlier this year its BlueVision strategy, which enables its SNMP-based management system, Spectrum, to manage SNA devices through a bidirectional link with IBM's NetView. However, Cabletron does not see an immediate user need for direct SNMP management of SNA devices, a company spokesman said. A SynOptics spokesman made a similar statement.

Despite this, the two vendors are participating in a vendor consortium to develop SNMP management information bases that would enable SNMP systems to manage SNA gateways and SDLC to LLC converters.

First grads

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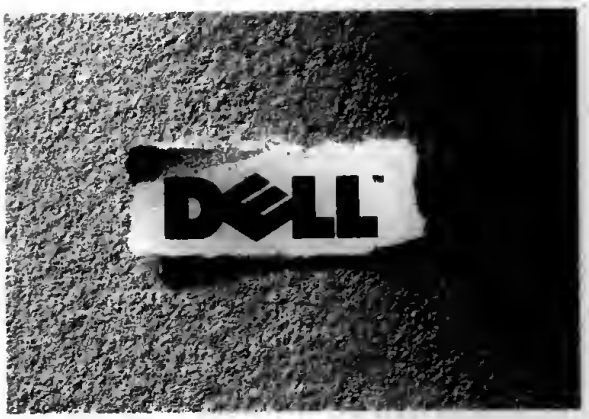
LEADER.



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CLONE.

IBM PC Co. follows Dell's lead with new support options

By Neal Boudette

Two months after Dell Computer Corp. introduced a menu of user-support options, IBM Personal Computer Co. has followed suit.

IBM's new Customer Protec-

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In Brief

Netmaker adds library

Make Systems, Inc.'s Netmaker can now perform simulations and what-if scenarios for internetwork installations that include Wellfleet Communications, Inc. routers. Netmaker simulation software enables users to assess the impact of network traffic loads, determine the impact of different routing protocols on throughput and determine how routers will respond to link failures, Make said. The Wellfleet device library costs $17,000 for a 50-router network, the company said.

Hitachi licenses OpenView

Hitachi Ltd. has licensed Hewlett-Packard Co.'s OpenView for Unix for use as the basis of its own network management family, NetMComet. Hitachi's software family, due out in December, will provide monitoring, fault-, configuration- and performance-management of distributed Transmission Control Protocol/Internet Protocol (TCP/IP) networks. It will run on Hitachi 3050RX and 3500 systems.

NetWare adventures

***How to Keep your Novell Network Alive*, by James Nadler and Don Guarnieri, is a self-described "Underground Guide to Novell Networks" that takes a humorous and illustration-intensive slant to the rigors of setting up and administering Novell, Inc. NetWare local-area networks. Topics covered include network design, internetworking, server, workstations and storage systems, cabling, backup and archiving, printing and communications. The book costs $26.95 and is published by Bantam Books.**

OS/2 LAN tool delivered

IBM recently began shipping LLAN Management Utilities/2, an OS/2-based LAN management tool that operates in Ethernet and Token Ring environments. It reportedly automates management of OS/2 clients and servers, DOS clients and Novell NetWare servers in four management areas: assets, operations, faults and performance. It costs $795 per license. Customer-requested enhancements include remote execution of a forced system shutdown and the ability of one LAN administrator to manage multiple LMU/2 systems from one workstation. It also measures the percentage of Token Ring bandwidth being used and issues alerts if a preset threshold is crossed.

IBM ships MPTN products

IBM began shipping the first products of its Multiprotocol Transport Networking (MPTN) architecture two months early, in late April, under the new name, AnyNet/MVS. The product is said to allow TCP/IP Sockets applications to run over a Systems Network Architecture network, and allows IBM Advanced Program-to-Program Communications applications to run over TCP/IP. It is available as a feature on VTAM Version 3 Release 4.2 and runs on both MVS hosts and OS/2 workstations. Monthly charges for mainframe CPUs range from $254 to $2,350. A one-time charge for workstations is $150.

3Com, NetManage team

3Com Corp. and NetManage, Inc. have signed an agreement under which NetManage will license 3Com's TCP/IP software for DOS systems, and the two companies jointly work on TCP/IP products for the DOS and Windows environments.

IP as native protocol

Network Systems Corp. has announced Greenline-IP, which is said to be the first host channel networking product to use the Internet Protocol as a native transport protocol. This lets customers connect TCP/IP networks to the Minneapolis firm's channel-based networks without the expense of a router or encapsulation overhead, according to Network Systems.

Apple updates two MacX.400 E-mail servers

By James Daly
CUPERTINO, CALIF.

With the words "open systems" on the lips of many client/server system designers, Apple Computer, Inc. continued its move into this potentially lucrative environment last week with the introduction of two new versions of its MacX.400 electronic-mail server.

The MacX.400 v1.1 was designed for enterprise networks, while the MacX.400 SD (Single Domain) is optimized for small organizations and workgroups that need to communicate with only one X.400 server. Both will be available later this summer, Apple officials said.

Both will provide users with the ability to send messages from Macintoshes to other platforms over the Internet and to recipients on other platforms connected to X.400 networks, said Apple senior director John Nauman.

E-mail has grown in importance in recent years largely because of its close ties with such things as databases and electronic data interchange.

Some analysts have even predicted that messaging with E-mail will become the major communications pipeline for desktop applications in the current decade.

Apple's new E-mail server products also include support for Transmission Control Protocol/Internet Protocol (TCP/IP) and Open Systems Interconnect (OSI). For instance, users can run X.400 messaging applications over the Internet using their existing TCP/IP infrastructure.

Apple's OSI transport, OSI Connection for Macintosh v1.1, will include support for the ISO Transport protocol that provides end-to-end connection in multivendor environments. It will be included in MacX.400 v1.1 and will also be available as a stand-alone product.

The MacX.400 SD has a suggested retail price of $2,950, while the MacX.400 server v1.1 is priced at $4,950. The stand-alone version of the OSI connection package costs $199.

Horwitt

CONTINUED FROM PAGE 61

when two or three systems need to cooperate closely on jobs, preferably over a LAN. You can see why message-oriented middleware does not fit nicely into a catchy slogan or TV ad.

To make things harder for message-oriented middleware, many IS managers are understandably leery about entrusting critical distributed computing strategies to 2-year-old companies with 30 or 40 employees.

So what can the MOM consortium do to persuade corporate America to take their products seriously? Everyone agreed at the first meeting that they need to educate the public. They intend to sit down and hammer out a set of common terms, plus some consistent descriptions for what MOM is and why it's useful.

Apples and oranges

The problem is that even within the MOM sector of middleware, apples and oranges abound. For example, IBM and Systems Strategies specialize in interconnecting Unix and IBM, TCP/IP and SNA systems; PeerLogic is hitting the LAN environments; and Horizon Strategies is addressing a variety of fronts.

One big user suggested standardized APIs that would ideally allow corporations to migrate to another MOM vendor, should one fold. However, the diversity of the MOM sector could make this extremely problematic, analysts and vendors say.

I suspect the smaller MOM firms will ally themselves with bigger software players, either by getting themselves acquired or through OEM agreements. PeerLogic is already cutting such deals with companies like TI and Legent. Let's hope these guys can get into the mainstream without losing their entrepreneurial spirit — they really seem to have taken a good swipe at some longstanding barriers to distributed computing.

Horwitt is a *Computerworld* senior editor, networking.

CUSTOMER FOCUS.

Oct. 1989	*First Place* (tie), *PC Week* Poll of Corporate Satisfaction (System 286)	USA
Oct. 1989	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 386/16)	USA
1989	*Best Sales and Support*, *Practical Computing*	UK
Apr. 1989	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 200)	USA
Apr. 1989	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 310)	USA
Sep. 1989	*Most Recommendations Service*, *Micro Decision*	UK
Feb. 1990	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 316)	USA
Feb. 1990	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 325)	USA
May 1990	*Most Company for Customer Satisfaction*, *McKinsey Report*	GER
July 1990	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 316LE)	USA
July 1990	*First Place*, *PC Week* Poll of Corporate Satisfaction (System 310)	USA
Nov. 1990	*Top In the (Annual) Customer Satisfaction Survey*, *Computer Weekly*	UK
Oct. 1991	*World Class Support Award*, Service and Support, *PC World*	USA
Nov. 1991	*Extraordinary Services*, *Computer Live* (System 220SX)	GER
Sep. 1992	*Rated #1* in an independent Customer Satisfaction survey conducted by Reliability Ratings™†	USA
Nov. 1992	*First Place*, Datapro Customer Satisfaction Survey, *Computer Weekly*	UK
Nov. 1992	*Most Recommended Personal Computer Manufacturer*, *Decision Micro*	FRA
Nov. 1992	*Top-Rated PC Company* in the 1992 Dataquest® Customer Satisfaction Survey*	USA

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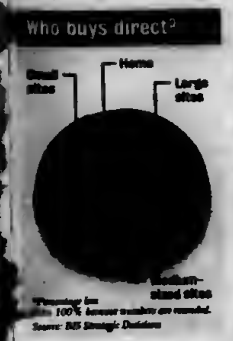
HOCUS POCUS.

IBM, Compaq direct-response efforts are lacking, users say

By Robert L. Scheier

While corporate customers are more willing than ever to buy PCs direct, they say IBM and Compaq Computer Corp. haven't done much to woo them from established direct-response players such as Dell Computer Corp. and Gateway 2000 Inc.

IBM and Compaq, which are still learning the mechanics of the direct-response business, are primarily offering a limited set of low-end products that lack the features and power required by corporate customers.



a 120M-byte hard drive and a Super VGA monitor for $1,549, available through IBM Direct. A similarly configured Dell local-bus system costs $1,599. In comparison, Compaq's non-local-bus 25MHz 486SX-based ProLinea costs $1,449 through DirectPlus.

"What we've seen is that there's not enough power in [Compaq] machines," said Roy Wilsker, manager of end-user services for The Kendall Co., a Mansfield, Mass., manufacturer of health care and other products that is currently buying Dell PCs. Wilsker, a former IBM PS/2 customer, is currently buying direct from Dell and has no plans to switch.

IBM's and Compaq's direct-response programs have also been impeded by their efforts to avoid alienating traditional resellers, which still sell the bulk of the companies' products.

Compaq has targeted its DirectPlus program at the small-business market rather than at its corporate customers, who will continue to buy mostly from resellers, said Barbara Krumland, Compaq's vice president for DirectPlus, in Houston. To ease dealers' fears, Compaq is only selling products through DirectPlus that are in good supply, she said.

However, some dealers were

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† Survey was independently conducted by Reliability Ratings, Needham, MA. The data is quoted from a 40-page report available for purchase through Reliability Ratings (617)444-5755. Reliability Ratings, the research company, is not affiliated with Dell Computer Corporation and does not endorse its products. *Source: Dataquest, Nov. 1992. Dell disclaims proprietary interest in the marks and names of others. ©1993 Dell Computer Corporation. All rights reserved.

[redacted]

Electronic data interchange

Sterling Software's Systems Software Marketing Division has announced Sterling Hypertracs, a generation of electronic data transfer products for enterprisewide data communications that run independent of communications protocols, platforms and applications.

According to the company, Hypertracs was designed to communicate through IBM's LU6.2 architecture to deliver peer-to-peer communications. An electronic mailbox is provided that serves as a voice-mail system for data files.

The mailbox gives applications independent data communications, allowing data to be forwarded, retrieved and stored within the network without having an impact on the application.

Pricing begins at $25,000.

▶ *Sterling Software*
11050 White Rock Road, #100
Rancho Cordova, Calif. 95670
(916) 635-5535

Network management

Infonet Services Corp. has introduced PerspeXion, a family of services designed to provide real-time, graphically displayed network management information.

According to the company, PerspeXion Vision was designed for users who require the services of Infonet's international networks, the Public Data Network (PDN) or Virtual Private Data Network (VPDN), or its high-speed Infolan communications services.

Real-time graphic, trouble ticket and alarm information is sent to the PerspeXion Vision monitor on the client's site from Infonet's Network Control Center.

From a single monitor, Infonet users can see their public and private networks with PerspeXion Manage. Daily, weekly and monthly network performance reports are delivered to Infonet's PDN, VPDN and Infolan service clients via PerspeXion Link.

The PerspeXion Vision service for a typical client costs about $1,000 a month.

The PerspeXion Manage service will be available during the fourth quarter of 1993, with prices varying depending on users' requirements.

PerspeXion Link typically costs $300 a month.

▶ *Infonet Services*
2100 E. Grand Ave.
El Segundo, Calif. 90245
(310) 335-2600

Gateways, bridges, routers

Fibermux Corp. has introduced the CC6672ZZ and the CC6673ZZ, two SmartBridge Ethernet local-area network modules.

According to the company, the products were designed for segmenting user traffic on the firm's Crossbow intelligent wiring hubs.

The modules offer either fiber-optic or thick-net front-panel connectors that give them the ability to bridge between external networks and Crossbow-based networks.

Forwarding rates of 13,000 packet/sec. are achieved, and extensive packet filtering functionality is provided. The modules can also work with LightWatch, Crossbow's Simple Network Management Protocol-based network management system.

The CC6672ZZ has two attachment unit interface (AUI) thick-net connectors and costs $3,495. The CC6673ZZ has one AUI connector and two fiber-optic inter repeater link connectors; it costs $3,895.

▶ *Fibermux*
9310 Topanga Canyon Blvd.
Chatsworth, Calif. 91311
(818) 709-6000

Ungermann-Bass, Inc. has announced four power-supply products designed to provide a more flexible and global power solution for Access/One users.

The products — ASE7000AUTO, ASE7000FTSYS1, ASE7000FTSYS2 and ASE7000FTPS — offer options for both fault-tolerant and non-fault-tolerant power systems. They fit into the 11 slots of the company's Access/One enterprise hub.

Fault management and disaster recovery support is provided for mission-critical networks composed of high-speed desktop network devices, bridges and routers.

Pricing for the products range from $1,500 to $3,995.

▶ *Ungermann-Bass*
3900 Freedom Circle
Santa Clara, Calif. 95054
(408) 496-0111

Microcom, Inc. has introduced MBR 7.0, enhanced bridging and routing software.

MBR 7.0 was designed for Microcom's Bridge/Router models MBR/6000 and MBR/6500.

The WANmiser Advantage, a set of features that helps users minimize internetworking costs such as downtime, monthly telecommunications services and wide-area network support, is incorporated in MBR 7.0.

Working in conjunction with the WANmiser features, MBR 7.0 reduces costs such as automatic bandwidth on demand, automatic dial backup and IPX autodial. The MBR/6000 and the MBR/6500 can be managed from within Hewlett-Packard Co.'s OpenView with the MBR Manager for HP OpenView, an optional feature.

Starter kit prices for the MBR/6000 and MBR/6500 begin at $4,299 for a two-port Ethernet remote bridge/router and $4,799 for a two-port Token Ring remote bridge/router.

▶ *Microcom*
500 River Ridge Drive
Norwood, Mass. 02062
(617) 551-1000

3Com Corp. has introduced a high-speed Ethernet Switching Module (ESM) for the company's LinkBuilder 3GH internetworking hub.

According to the firm, ESM offers new levels of internetworking functionality in large high-density networks and bandwidth-intensive distributed computing environments.

Improved throughput performance, additional network media support and two enhanced modes of operation-bridging mode or switching mode deliver the functionality.

ESM is powered by a reduced instruction set computing-based processor and has the ability to switch and bridge data at 50,000 packet/sec. ESM offers three media interface options.

The eight-port 10Base-T and four-port attachment unit interface modules cost $12,500. The eight-port fiber-optic 10Base-F module costs $14,000.

▶ *3Com*
5400 Bayfront Plaza
Santa Clara, Calif. 95052
(408) 764-5000

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Mainframe utilities defy hardware trend

By Thomas Hoffman

If the mainframe is dead, why are the industry's leading independent software vendors racking up record revenues?

One of the chief reasons, analysts said, is the dramatic rise in the use of data center utilities. Currently, many mainframe shops are putting off hardware upgrades while they await a more mature client/server market. To prolong the life cycles of their big iron, they are socking capital into automated software.

Information systems budget allocations for mainframes dropped nearly 29% between 1991 and 1992, according to Computer Economics, Inc., a Carlsbad, Calif., market research firm. The rising use of data center utilities "explains why you have hardware revenues declining while software revenues are still on the rise," noted Charles E. Phillips, a financial analyst at Kidder, Peabody & Co. in New York.

For example, in a May 17 report he compiled on the IBM DB2 database market, Phillips projected that the DB2 utilities market "is healthier than other mainframe software segments and is likely to grow at a 25% to 30% annualized rate over the next 18 months."

Some observers said the shift back to mainframe utilities reflects a cyclical trend. "There was robust demand for systems utilities when the economy went soft in the early 1980s, and it's happened again," noted Terence Quinn, a managing director at Furman-Selz, Inc., a New York brokerage. For example, Quinn said the continued economic malaise in Europe has helped fill the coffers of leading utilities vendors such as Computer Associates International, Inc., Legent Corp. and BMC Software, Inc.

Playing it smart

Of course, prudent IS management stateside has also helped contribute to the resurgence of the utilities market. Take Dr Pepper/The Seven-Up Co. The Dallas beverage distributor has been planning to replace its aging IBM 3084 machine for more than a year. But after comparing the licensing and maintenance costs of the 3084 with potential IBM 3090 successors, the firm realized that making do with the same machine would save it $4,000 to $8,000 per month, according to John Stevenson, vice president of MIS.

"Over the past few years, we found that if we judiciously target utilities to do a couple of things for us — like manage the throughput or examine the heartbeat of a system and determine where we have stress or strain — we can work around doing hardware upgrades for our critical needs," Stevenson said.

So last year, Dr Pepper/Seven-Up launched a project — aptly named "Save the Whale" — targeted at delaying the 3084's demise. The "whale" is used to run the firm's financial operations, while a Digital Equipment Corp. VAXcluster handles its sales and marketing applications. When I/O bottlenecks clog the IBM 3084, Dr Pepper/Seven-Up relies on performance-monitoring tools rather than upgrading the hardware to alleviate system constraints.

The soft drinks company has given the 3084 a stay of execution until at least Labor Day. Still, Stevenson acknowledged it is becoming increasingly difficult to keep the whale alive from a cost-justification standpoint. "As the cost of iron falls, it gets tougher to determine whether to spend $60,000 on a software upgrade when the hardware costs are getting closer to that," he said.

Others are not so sure. "Software is a smaller investment," chimed in M. Lewis Temares, chief information officer at the University of Miami. Temares said utilities make it easier to modify existing hardware than to scrap it. The smart thing to do, he said, is to "make use of what you have but find a way to do it better at a lower cost."

The school is doing just that. Earlier this year, the university installed Candle Corp.'s Omegamon performance monitor, according to Freddie Robinson, senior manager of technical operations. Omegamon is helping the university prolong the life of its IBM Enterprise System/9000 Model 580 by conducting performance tuning and capacity planning on-line in real time, Robinson said.

Temares said the use of automated software will allow the university to keep the mainframe for at least five more years, during which time it will enable the machine to function as a large corporate server.

Creativity led one IS shop to integrate the best features of its utilities. Last year, United Parcel Service, Inc. created an interface between its Computer Associates CA-7 scheduling package and Legent's AutoMate operations utility. By doing so, manual intervention for data center tasks such as job scheduling has been eliminated, according to Ed Zolcinski, a UPS computer operations manager. Now, the package carrier's Mahwah and Paramus, N.J., data centers can be managed from a single console, freeing up operators to help out with other data center chores.

For UPS and most companies, the single largest IS expenditure is not equipment but people. Zolcinski estimated that the integration of the two utilities has helped UPS reduce the number of console operators between the two data centers from eight per shift to five.

It does not hurt to strike a good deal with a vendor, either. Jim Hammon, a lead systems engineer at The Travelers Corp. in Hartford, Conn., said The Travelers recently replaced IBM's Resource Management Facility (RMF) with Boole & Babbage, Inc.'s CMF Monitor Version 4.3, primarily because Boole & Babbage offered to throw in a direct-access storage device manager, called DASD Advisor, for free.

Besides, Hammon said, CMF Monitor offered perks that IBM's RMF did not, such as the ability to monitor The Travelers' 11 operating systems from a single terminal.

Coming soon

Here are some of the new products and upgrades that are on the way from the major data center utility vendors:

•Legent: A Microsoft Corp. Windows NT version of SAR (SYSOUT Archival and Retrieval) is slated for late last-ing/ly mid-1994. SAR is an enterprise output management package that currently provides on-line viewing of computer output for IBM MVS environments.

Legent is also developing a Windows NT version of AutoMate/XC, a workstation-based automated system operations package that can externally manage multiple IBM and non-IBM systems, including Digital Equipment Corp. and Tandem Computers, Inc. mainframes. Currently available on the OS/2 platform, AutoMate/XC should also reach beta last-ing/ly mid-1994.

•Boole & Babbage: MainView Monitor, an OSF workstation-based product that was designed to off-load mainframe activity onto OSF workstations, is currently in alpha testing and slated for general availability this fall.

•Computer Associates: The next releases of CA-7 and CA-Scheduler will include an option for a rules-based recovery mechanism. CA-7 3.1 should begin shipping by October, while CA-Scheduler 7.2 is due out by the end of this year.

— Thomas Hoffman

Unix gusher

The Home Oil Co. may well strike it rich if it can successfully follow through on plans to migrate its costly IBM MVS environment to Unix. According to Gary Graham, coordinator of data management at the firm, the shift from MVS to Unix is expected to help the company cut its monthly MVS licensing and maintenance costs by $10,000. Home Oil is relying on Computer Associates' CA-Unicenter for Unix systems management package as the linchpin for the conversion.

By the end of this month, Home Oil plans to begin beta-testing CA's IDMS for Unix database on a Hewlett-Packard Co. HP/9000 Model 827 machine. The fuel distributor has been running some of its geological and oil exploration applications on IBM RISC System/6000 Unix workstations, Graham said. But the ultimate goal is to move all of its MVS financial and other engineering applications over to Unix within the next three years.

Home Oil's IBM MVS-based data center is almost fully automated, with the exception of its tape mounts, which are done manually. Graham is hoping Home Oil can carry over its "lights out" approach to the planned Unix data center.

But finding adequate Unix-based utilities has not come easy, Graham said. While some packages such as CA-Unicenter offer help by providing systems management and security administration, he said, there is still a dearth of Unix tape management and performance tools on the market.

"Some of the things we miss are equivalents to Omegamon on MVS," Graham said, referring to Candle's performance monitor, which was designed to help optimize CPU use and storage on IBM's MVS, VTAM, DB2 and CICS environments.

While Home Oil continues its search for Unix utilities, Graham said, the simplicity of CA-Unicenter is helping to make Unix converts of the company's six data center staffers. "One of the reasons we went to Unicenter was so that our data center staff doesn't have to be trained to know more than base-level Unix commands," Graham said.

— Thomas Hoffman

Wang lowers prices, adds choices on VS line

By Craig Stedman
LOWELL, MASS.

Wang Laboratories, Inc. has introduced new versions of its high-end and mid-range VS systems with much lower prices than the models they replace, continuing an attempt started in the past few months to become more aggressive in its marketing and sales.

"Our policy is we're not going to get beat as much in the marketplace, and we've given our people the authority" to discount more heavily, said David Goulden, Wang vice president of marketing. "We're paying much more attention to what's out there in terms of competition."

Goulden added that the more aggressive posture applies both to the proprietary VS line, which is facing sharp declines in demand, and Wang's open systems products based around RISC System/6000 hardware supplied by IBM. It also covers sales of used equipment by the company.

The new high-end VS 12000 Model 650 starts at $535,000 with 64M bytes of memory, compared with a $910,000 base price on an earlier Model 550 with 32M bytes of memory. The same processor is used in each system, but Goulden said the Model 650 performs about 10% faster mainly because of a new memory architecture.

The new architecture includes an integrated memory control unit and increases VS memory capacity from 256M to 2G bytes, Goulden said. A new release of the VS operating system was added to support the memory increase; Release 7.50 is the last major one planned, although enhancements will continue, he noted.

Wang, which also uses a smaller cabinet with the 12000 Model 650, has now streamlined the VS family from 20 systems a year ago to six machines. It also is simplifying its software licensing policies, making pricing for new and used operating system licenses identical and cutting the number of pricing tiers for its applications from seven to four, Goulden said.

"Workflow technology now provides a software platform for the critical business process of organizations all over the world."

"The first two White Papers we did with Computerworld were great successes for AIIM. Because of the advantages that document image processing provides to organizations, imaging has begun to establish a widespread presence in U.S. business and government organizations. Our White Papers showed how imaging can play a crucial role in helping organizations to gain a competitive edge."

"We are teaming up with Computerworld and IMC this year for an upcoming White Paper on 'Workflow Technologies in the 1990s' to be published June 14, 1993. This paper presents a detailed examination of the imaging applications and buyer's requirements for workflow technologies as well as projected market growth forecasts for the coming years. This will be the first published paper to examine this market in both the U.S. and Europe."

"AIIM's mission is to educate IS management on the ever-changing world of electronic imaging and micrographics. This Computerworld White Paper will help us reach the most influential IS decision-makers."

Sue Wolk
Executive Director
Association for Information and Image Management

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In Brief

Anchor Bank works on image

The Anchor Bank will install image technologies from NCR Corp. and Document Solutions, Inc. to automate the storage processing and retrieval of checks for its South Carolina offices. The imaging system, slated for implementation in the fourth quarter, will include NCR's 3350 departmental server, the NCR 7780 Image Transport and other peripherals.

SHORT TAKES IBM Programming Systems has cut prices almost in half for its OfficeVision mainframe- and minicomputer-based software.... Zeos International Ltd. said some of its Intel Corp.-based PCs have been approved for the NASDAQ Workstation II program.... Mainframe systems software maker Compuware Corp. said it plans to acquire EcoSystems Software, Inc., a maker of client/server systems management tools.... Fairfield University in Fairfield, Conn., has signed a seven-year, $17 million contract with Systems & Computer Technology Corp., a Malvern, Pa., outsourcing firm, for administrative software and outsourcing services.

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What's So GREAT About 64-BIT COMPUTING?

The competitive advantage — it's what every business continually strives for. And that's exactly what Digital's 64-bit Alpha AXP architecture gives you. The power of Alpha AXP systems will assist you in meeting your business requirements today and tomorrow.

Today, Alpha AXP systems — from desktop to server — can dramatically enhance your existing applications. In terms of your business future, Alpha AXP systems open the door to new ways of approaching your business problems, without constraints and on your choice of platforms.

Plus, Digital's 64-bit computing architecture offers an unprecedented 25-year growth path — assuring you that today's investment will be protected well into the 21st century.

Supercomputers Introduce Power of 64 Bits

The unbounded power and precision offered by 64-bit computing was first introduced by costly supercomputers and has been garnering dramatic benefits for a handful of specific industries.

With 64 bits, engineers designing computer simulations are given finer granularity, increased accuracy, and greater interactivity. Thus, what once took months or years to design now takes days or weeks — with animated visualization that borders on reality.

For example, a major U.S. automobile manufacturer that once used real automobile prototypes for crash experiments saved months of time and millions of dollars by implementing electronic crash simulations to collect critical information.

Along the same lines, the unbounded performance of 64-bit computing helped a leading U.S. chemical company create a synthetic catalyst in weeks instead of years — saving the company millions in experimental chemistry costs.

Alpha AXP Makes Supercomputer Power Affordable on the Desktop

Today, Digital's Alpha AXP architecture puts supercomputer power on the desktop for less. In fact, our 64-bit technology has the best performance and price/performance ratio in the computing arena. Now, virtually every industry can access the power of 64 bits to address their business problems.

Technologies that benefit from the power provided by Alpha AXP systems include:

- **Graphical representation**

Used in applications including CAD/CAM, molecular modeling, and computational fluid dynamics, this technology will gain significant design time advantages — resulting in greater productivity and cost savings for industries.

- **Information handling and retrieval plus recognition/interpretation**

Applications using technologies such as unstructured data (document image), EDM, voice, text-image search by content, and knowledge bases will dramatically benefit from the processing power of the Alpha AXP architecture. For instance, the paper mountains of insurance companies can be scanned into EDM servers to reduce search times from days to seconds.

- **Scheduling and multivariable problems**

Utilizing Alpha AXP systems, applications such as inventory and replenishment/logistics, chain management, and crew and maintenance scheduling can be treated in increasing detail in the retail industry and many others in order to garner higher returns.

- **Mathematical computations**

Applying 64 bits to risk analysis, realtime computation, and complex event prediction will allow banking and finance industries to solve larger problems faster, and with greater detail and accuracy.

Organizations Select Alpha AXP Systems as Computing Technology of Choice

Most often, you're not concerned about how technology works, but only that it works to provide business benefits. Many organizations worldwide have selected Digital's Alpha AXP systems for the compute power they offer — power that ultimately enhances business productivity and profit.

Boston Edison Plugs into the Power of Alpha AXP Systems

Boston Edison has recently selected two Alpha AXP systems (the DEC 3000-500 system and the DEC 3000-400 system) to run its primary application, EMS/SCADA. In its search for an open system that offered a distributed workstation-based solution, the company chose an Alpha AXP system over the IBM RS6000 because of the system's price and price/performance advantage. Digital's 64-bit technology will see Boston Edison into the 21st century.

Why not stop working around your current technology, and start letting technology work for you? Don't waste countless hours maneuvering around the limits of your current computing system.

Instead, use Digital's Alpha AXP 64-bit RISC architecture to implement new, more cost-effective ways of solving your business problems now and in the future.

Tampere University Replaces Supercomputer with Alpha AXP Systems

Finland's Tampere University of Technology needed to add more compute power to its engineering computing lab. It found the solution in the 64-bit arithmetics provided by Alpha AXP systems. Sixty-four bits will give the university a new dimension for its technical computing — enabling users to solve more complex problems at a much faster rate. The Alpha AXP systems will be utilized in various physics, electronics, and signal processing simulations, and for structural analysis tasks.

Take Advantage of the Power and Affordability of Alpha AXP Technology

Alpha AXP technology can help companies across a broad range of industries improve cash flow, increase profitability, enhance productivity, and gain a competitive edge. With the best price/performance ratio in the industry, it makes good business sense to utilize 64-bit technology today in order to maintain your competitive edge tomorrow. ■

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ATTENTION SUN USERS

There's No Better Time to Move to Alpha AXP Systems

"Every Sun user is faced with a significant transition as they move from SunOS to Solaris. The move to Alpha AXP offers a smoother path with more growth potential than any other option — including moving to newer models in the SPARC family."

JOHN O'LEARY, VICE PRESIDENT, UNIX MARKETING
DIGITAL EQUIPMENT CORPORATION

Today, Digital's workstation upgrade program makes your path to Alpha AXP systems even smoother. Our upgrade program allows users of Sun workstations — based on the SPARC architecture — to move to Digital's Alpha AXP workstation family. The major benefits? A dramatic increase in application performance at half the cost.

Covering all SPARCstation workstations from the SPARCstation ELC through the SPARCstation 10 models, Digital's limited-time upgrade program lets Sun users trade up to Alpha AXP systems including the new DEC 3000 Model 300 AXP or the DEC 3000 Model 500x AXP system, the world's fastest workstation.

Available program credits range from $2,000 to $10,000 toward any system model you select for your SPARCstation trade. You can choose the DEC 3000 Model 300 or Model 400 AXP workstation — with 16-inch color monitor — or select the DEC 3000 Model 500 AXP system or the DEC 3000 Model 500X AXP system. Plus, any configuration of the Alpha AXP workstation can be ordered through the trade-in program.

In addition, Digital offers you a complete range of migration services including planning, support, tools, and full project management. You can continue to use your Sun systems for up to 60 days during the transition period — with complete assurance that current projects will continue to run without interruption.

As a leading supplier of multivendor maintenance service for both Sun hardware and software, Digital carries a basic inventory of spare parts — components from traded Sun systems — that support a large base of existing and future large maintenance agreements.

For information on Digital's limited-time Workstation Upgrade Program for Sun users, call 800-DIGITAL (800-344-4825), press 2, and reference ext. 76N. ■

Over 1,200 Alpha AXP Applications Shipping Today

FREE Catalog Gives You All the Details

If you've been looking for the right application to run on your Alpha AXP system, your search is over.

Since announcing the first Alpha AXP systems in 1992, Digital and its software partners have ported more than 2,800 applications to the OSF/1 and OpenVMS Alpha AXP operating systems. More than 1,200 of these applications are shipping right now. You'll find the most popular software products in every category, including office systems, databases, software development tools, and engineering applications.

And now it's easier than ever to find out exactly what's available. You are one phone call away from receiving Digital's "Alpha AXP Software and Applications Catalog" — a free publication that provides you with address, contact, and shipping information on Alpha AXP application software.

Here's a sampling of some of the industry-leading applications shipping today. But this is just a small portion of what's available. In fact, applications are being added at a rate of 300 per month.

To get your FREE "Alpha AXP Software and Applications Catalog" (part number EC-J2294-10), call 800-332-4636, and reference ext. 20. ■

[illegible]	APPLICATIONS	TYPE
Adra Systems	CADRA-III	CAD
Applix Inc.	Axis™/x	Office
ASK Computer Systems Inc.	MANMAN, MANMAN/X	Manufacturing
Cinram Systems Inc.	Sapo Server Mentis	Database (DB2 compliant) Development tools
Coda Software	Coda-VAS	Accounting
Cognos Corporation	PowerHouse	4GL and tools
Cybery Systems, Inc.	The Solution Series	Payroll, Human Resources
Dynix, Inc.	Dynix Automated Library Systems	Library management
EMC Systems, Inc.	SuperCache	I/O accelerator
Electrical Engineering Software	Precise	ECAD
Hibbitt, Karlsson & Sorensen, Inc. (HKSI)	Abaqus	MCAE
IDX Systems Corporation	IDXhub, IDXnet	Health care
Information Builders Inc.	FOCUS for Alpha	Software Development
Informix Software Inc.	Informix-OnLine, Informix-SE, Informix-SQL	Database
Ingres, the ASK Group	INGRES Intelligent Database, INGRES/Vision	Database
Integrated Silicon	VerifChek, DRC	ECAD
Manufacturing and Consulting Services, Inc (MCS)	AMVL-9000	CADD/CAM/CAE
Oasys	Cross Tools	CASE
Oracle Corporation	ORACLE7 ORACLE Manufacturing ORACLE Financials ORACLE Human Resources	Database Manufacturing Financial Human Resources
Pacific Numerix	PCB Explorer, PCB Thermal	ECAD
Parametric Technology Corporation	Pro/ENGINEER	MCAD
Progress Software Corporation	Progress 4GL/RDMS Progress ADE	Database Application Development
Quad Design Technology Inc.	[illegible]	ECAD
Ross Systems, Inc.	[illegible] [illegible] [illegible] [illegible]	Finance/Accounting 4GL and tools Distribution Manufacturing
SAP of America, Inc.	[illegible]	Manufacturing
[illegible]	[illegible]	Health care
Software AG	Adabas Natural	DBMS Software development
[illegible]	[illegible]	Manufacturing
[illegible]	[illegible]	[illegible]
[illegible]	[illegible] [illegible]	Database Software tools
[illegible]	[illegible]	Manufacturing
[illegible]	Powerview	ECAD
Wolfram	Mathematica	Science/research

STEP UP to [illegible]

The economy has taken to toll on [illegible]. There is a "light at the end of the tunnel" for those companies that have the [illegible] to respond quickly to customer business needs. Digital is one such organization — finding new opportunities to help companies respond to today's business challenges.

But, where does that leave you? Or, more important, where does that leave your current computing investment?

A glance at today's headlines shows some computer companies consolidating and redefining their products and services to better meet your needs. Digital has been listening carefully as your concerns and is prepared to help.

How? By offering you a long-term, stable computing environment, a 25-year architecture with Alpha AXP, database and graphics capabilities, and a clearly defined path to get there. Together with recognized software vendors, Digital will provide the hardware products and software conversion tools you need to migrate to VAX VMS, Alpha AXP running OSF/1 or OpenVMS, ULTRIX on DECstations, or SCO UNIX on Intel.

In short, we can provide you with a complete set of migration solutions services.

Migration offers you a way to protect your investment in Prime computers. Through our comprehensive set of migration services, you can make a business-savvy transition that's right for your company.

Good News for Prime Customers

To remain competitive in today's market, businesses must anticipate their computing needs. Companies currently dependent on Prime technology are facing several challenges, including when and how to:

- Upgrade current technology without losing the entire investment in their Prime-based solution
- Move their business applications to a computing architecture that meets their open systems requirements
- Plan the migration to a new [illegible] a timeline that [illegible] is easy to implement
- Implement a client/server strategy
- Contain or minimize operation costs.

In spite of these challenges, there is good news. Through its innovative migration program called Digital Solutions for Prime, Digital offers Prime customers a clear growth path to 21st century computing.

Simple, Practical Solutions

Whether your business goal is migration, consolidation, technology [illegible] or reduction of operation costs, Digital has the consulting experience and tools you need [illegible]. In fact, our Solutions Integration Unit — along with our Independent Software Vendors — [illegible] on hand at the National Prime Users Group Conference recently to demonstrate Digital Solutions for Prime on the Alpha AXP platform.

Companies previously dependent on Prime have transitioned easily to Digital platforms because of all we have to offer, including:

- Prime migration/conversion consulting experience and extensive tool set.
- A choice of operating system environments such as PICK, OSF/1, OpenVMS, ULTRIX, and SCO UNIX
- An unparalleled selection of software applications for each of these operating system [illegible]
- Multivendor systems and network service.

What's more, Digital offers unbeatable price/performance for a full range of systems, from the desktop to the data center. For companies considering Digital for the first time, we [illegible] Prime maintenance costs significantly.

For information on Digital Solutions for Prime, call [illegible] vendor service assessment, call 800-[illegible]-8636 and request a [illegible] your area. ■

For SUPER PERFORMANCE, SUPERCHARGE Your VAX or Alpha AXP Systems with SuperCache from EEC Systems, Inc.

How do you measure computer system performance?

Not by CPU speed alone. In the last five years, CPU performance has increased phenomenally, while performance improvements in disk I/O have lagged behind. Depending on how often your application reads or writes data, you could end up with a serious I/O bottleneck.

> **"Now that SuperCache is available for Alpha AXP systems, customers will be able to take complete advantage of the impressive speed and expanded memory capacity of this advanced architecture."**
> ERIC DICKMAN, CEO, EEC SYSTEMS

Now there's an easy way to realize the full potential of your OpenVMS VAX, OpenVMS Cluster, or Alpha AXP system. SuperCache software from EEC Systems, Inc., feeds data to your application at memory speed rather than disk speed — enabling you to cut application processing time dramatically or to add 50 percent more active users to your current application without any decrease in performance.

"Using SuperCache, customers can expect to increase performance 2 to 15 times," says Eric Dickman, EEC's chief executive officer. "In addition to that, SuperCache works transparently, so you don't have to change your application tn make use nf it. And nnw that SuperCache is available for Alpha AXP systems, customers will be able to take complete advantage of the impressive speed and expanded memory capacity of this advanced architecture."

SuperCache works by using main memory — not the disk — to store the most recently used data in three dynamically sized caches. This means that frequently accessed data is read directly from memory. Because the interconnects between memory and the CPU are very fast, your I/O is significantly accelerated, and the overall efficiency of your VAX, OpenVMS Cluster, or Alpha AXP system improves significantly.

Fnr complete protection of your data, SuperCache writes to the disk at the same time that it writes to memory. In addition, SuperCache software is multithreaded to support full parallel processing on multiprocessor systems.

"The end result is efficiency as well as speed," explains Dickman. "Because customers can run existing applications faster, they're able to put more applications or more users on the systems they've got. Resources — both capital and human — are used with maximum cost effectiveness."

EEC and Digital Deliver Customer Satisfaction

A divisinn nf EDS, EDS Personal Communications of Waltham, Massachusetts, provides services such as billing and fraud protection to cellular communication companies. In doing so, the company uses almost 500 VAX Units of Performance (VUPs) and more than 400 gigabytes of on-line storage, spread across 30 standalone and clustered VAX systems. In addition, it recently acquired its first DEC 4000 AXP system.

SuperCache enables you to increase the number of users you can support — without buying a new system.

"We're excited about the speed, additional memory capacity, and memory management features of Alpha AXP," says Chris Yetman, principal consulting engineer at EDS. "As a cellular communications service company, we depend on quick turnaround for a competitive edge. With SuperCache running on OpenVMS today, we can double the throughput of many jobs — without having to reengineer our applications."

EDS Personal Communications also makes use of SuperCache monitoring features that help determine which disks will get the maximum benefit from caching. And, with SuperCache, you're able to cache specific disks or your entire I/O subsystem.

"When we first installed SuperCache, improvements in performance were so dramatic that when customers called to get the status of their jobs, we were able to tell them that they had already been processed," Yetman continues. "When we start moving over to Alpha AXP, we expect to see even bigger performance improvements."

Available for OpenVMS VAX systems, OpenVMS Clusters, and Alpha AXP systems, SuperCache software can be purchased directly from EEC Systems. In addition to supplying this software-only product, EEC can supply TurboWare, a package that bundles SuperCache software with Alpha AXP or VAX memory — at prices lower than each product sold separately.

For information and a FREE SuperCache demo, call EEC Systems at 508-443-5106. ■

PUTTING IMAGINATION TO WORK

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YES

ONE UNIFIED NETWORK PRINTING STRATEGY IS HERE

AND DIGITAL HAS IT

The Answer Is

Is there any company around today that doesn't work in a multivendor computing environment? Today, countless multivendor environments — including your own — prove that computing has changed dramatically. And with this change comes the need for a network printing solution that works for your mix of HP-UX, IBM AIX, SCO UNIX, SPARC, BSD UNIX, and NetWare systems — or a combination thereof.

Meet and exceed your printing requirements with Digital's unified network printing strategy — a solution based on our PrintServer family of printers and PrintServer software for each supported platform.

Digital's variety of PrintServer printers range in performance from 17 to 32 pages per minute, and display powerful features and options including:

- **Remote Management Utility**

Whether your PrintServer printer is down the hall or in another country, you can monitor and manage it right from your chair — saving time and enhancing productivity.

- **Access Control**

This feature allows system managers to define access to the printer. Once set, the printer itself mediates the access control.

- **Accounting**

Easily keep track of accounting information about usage to a system of your choice. Also included is an accounting reportiog package that will generate reports based on costs and other criteria. Plus, if cross-charging is essential for your business, take advantage of a unique feature called Reliable Accounting — enabling your printer to print only when accounting data can be written. If the accounting host is shut off, or taken off the network, the printer will refuse connections — guaranteeing that all jobs are accounted for.

- **Soft Loading or Booting**

The PrintServer printer is a bootable device, meaning that printer upgrades may be done entirely with software. On platforms including SPARC, IBM AIX, HP-UX, SCO UNIX, BSD UNIX, SunOS, OpenVMS, ULTRIX, and OSF/1, booting is accomplished with the industry-standard bootp and ftp protocols. The software includes a bootp daemon if your system has none. OpenVMS systems load PrintServer printers nsing Digital's Maintenance Operations Protocol (MOP).

- **Resource Loading**

With Resource Loading, PostScript resources may be defined to load at PrintServer printer boot time — guaranteeing that certain custom fonts or other files such as logos, forms, or letterheads are always resident on the printer.

> If you think that no single printing solution could possibly work for your mixed bag of IBM AIX, SCO, HP-UX, NetWare, SunOS, OpenVMS, ULTRIX, OSF/1, and BSD UNIX systems — think again. Digital has the complete solution — both printing software and printer hardware — that's right for your multivendor environment.

Digital Printing Software: Easy to Install, Packed with Features

Printer hardware is only half the story. The real key to providing a total printing solution for your multivendor environment lies with available printing software.

Digital's printing software was designed and built to integrate seamlessly with each operating system's printing environment. Plus, our software comes complete with a host of features, including the ability to print job banner pages and the ability to customize the layout of the banner page.

For SPARC/SunOS, other BSD systems, HP-UX, IBM AIX, and SCO UNIX systems, installations are driven by a user-friendly script. The menu dialogue is foolproof and allows for multiple installations or large networks. All files, including installation scripts and documentation, are bundled into a "tar" file format, and shipped on the media that's right for your needs.

For all platforms, installations can be customized to suit your directory structure and preference. What's more, reinstallation over older highly customized versions is made easy via "PrintServer Object Database" — acting as a roadmap to all the choices made when installing the software.

Digital's software kits also include full documentation and detailed "man" pages — providing you with complete printing information. Plus, you and your users are supplied with user reference cards that maximize the ease and productivity of the printing process by listing the most commonly used print commands from all supported platforms.

Client Software for NetWare Systems

In addition to UNIX offerings, Digital provides solutions for your NetWare environment. These solutions allow NetWare users to share the same Digital PrintServer printers as users on HP-UX, IBM AIX, SCO UNIX, SPARC, BSD UNIX, OpenVMS, ULTRIX, and OSF/1 systems.

Digital's "NetWare Print Client" fits seamlessly into the standard NetWare client/server architecture — offering users a range of features from the ability to do job-separator banner pages to multi-page "number up" printing.

For information on Digital's network printing solutions, call Abe Litman, PrintServer Marketing, at 508-635-8425.

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PUTTING IMAGINATION TO WORK

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DEC aims fault tolerance at high end

DECUS attendees told little need for additional fault-tolerant machines

By Craig Stedman
ATLANTA

Digital Equipment Corp. expects to finally ship its delayed VAXft 810 high-end, fault-tolerant computer in late July, but the company is still not committing to developing any additional fault-tolerant machines based on its Alpha AXP reduced instruction set computing (RISC) architecture.

"We don't have a firm plan to do that yet," said William Demmer, vice president of DEC's Computer Systems Group, at the recent spring conference of the Digital Equipment Computer Users Society (DECUS) here.

Demmer said he wants to resolve the Alpha question this month so funding for a project could be included in the engineering budget for fiscal 1994, which starts late this month. However, he said a final decision may slip into July because DEC's new industry business units are involved in the discussions.

Last fall, DEC disbanded what had been a separate fault-tolerant research and development group and folded that activity into its central engineering organization. The firm does not expect to put much emphasis on hardware-based fault tolerance even if it does go forward with an Alpha system, Demmer added.

"I don't look at it as a major industry segment anymore," he said. "I think the [fault-tolerant] market is going to shrink over time, as high availability becomes more available in general systems. So we don't plan to be a dominant vendor in that market."

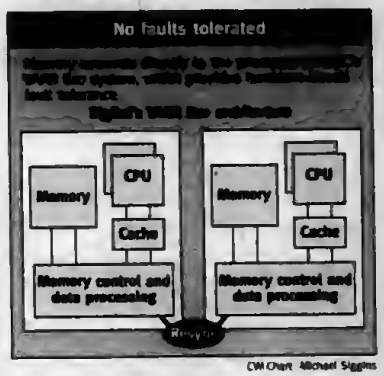
> "I think they're meeting some of the needs out in the marketplace that they seemed to miss the boat on before."
>
> *—Randy Bowser*
> *Computer specialist*
> *U.S. Defense Logistics Agency*

The relatively low level of sales for the VAXft line makes that almost a self-fulfilling prophecy, analysts noted. International Data Corp. (IDC) estimated 1992 VAXft sales totaled just $20 million to $25 million, down from about $60 million in 1991.

"Looking at [DEC's] numbers, you can see that it really lost focus over there," said Stephen Josselyn, a senior analyst at IDC.

Peter Kastner, vice president of the Boston consulting firm Aberdeen Group, added that DEC originally expected VAXft to be "a several hundred million dollar business" per year by now.

DEC is hoping the VAXft 810 will allow it to compete for some high-end business against market leaders Tandem Computers, Inc. and Stratus Computer, Inc., something it admittedly has not been able to do with existing VAXft machines, which top out at 25 transaction/sec.



CW Chart: Michael Siggins

"We weren't hitting the high end of performance with the earlier machines," said Vincent Mollomo, DEC's fault-tolerant systems marketing manager. He said he expects the single-processor 810 to be capable of reaching between 80 and 90 trans./sec., although performance testing has not been completed yet.

Coming in July

The 810, which had been scheduled for introduction last fall but was delayed because of software problems, is now expected to ship "probably around the end of July," Mollomo said. Pricing will start at $175,000 for a diskless, single-cabinet system with 32M bytes of memory and a single I/O module.

The machine will use a 45-MHz VAX processor and support up to 256M bytes of memory and 56G bytes of storage, Mollomo said. Changes from existing machines include the direct attachment of memory to the CPU and a switch of the uninterruptible power supply from a standard feature to an option, he added.

Users at the DECUS conference had kind words for the 810, opinions based on details released by Mollomo during a fault-tolerant session. "I think they're meeting some of the needs out in the marketplace that they seemed to miss the boat on before," said Randy Bowser, a computer specialist at the U.S. Defense Logistics Agency.

George Ramsey, an employee in the engine test department of Ford Motor Co., also had a favorable impression and was not scared away by DEC's indecisiveness about an Alpha-based system. Attendance at the fault-tolerant session was scant, however; only seven users came.

DECUS attendees find software issues remain

REPORTER'S note book

With the fiscal 1994 budget still not finalized, DEC continues to hold off on deciding which of the 230-odd products in its layered software portfolio will stay in central engineering and which will be farmed out to overseas research and development units, sold to third parties or "retired."

Budgeting should be finished shortly because the new fiscal year starts late this month, and engineering executives also expect to complete discussions this month on what sort of software framework they want to keep internally.

Decisions on specific products are expected to start coming down in July and August, but the process will extend over "many months," said Dick Mahoney, group manager for software business development, at the Digital Equipment Users Society (DECUS) conference in Atlanta.

"It's not like July 1 we know how many of the 230 are coming and how many are going," Mahoney said.

The uncertainty over the software portfolio is part of the reason why it is taking longer than planned to get a full commercial suite of layered products out for the DEC OSF/1 operating system, according to William Demmer, vice president of the company's Computer Systems Group.

Meanwhile, Demmer said symmetric multiprocessing is "the most needed functional enhancement to OSF/1" and is getting the highest priority in R&D, "but it isn't going to happen much faster than the schedule calls for," which is currently the first half of 1994.

DEC's Robert Palmer *promised DEC 'will get more aggressive'*

Funding for exploratory work on putting OpenVMS on the promised microkernel version of OSF/1 and building OpenVMS application programming interfaces into Windows NT so OpenVMS software could run in that environment is expected to be included in the fiscal 1994 OpenVMS engineering budget. Both are potential alternatives during the next couple of years, Demmer said. Donald Harbert, OpenVMS engineering vice president, said the OSF/1 and Windows NT ideas "are really in the category of thought experiments" for now, but his unit plans to look at those options in fiscal 1994.

Demmer said capturing 20% to 30% of the NT market with Alpha AXP would be "a nice entree for Digital to get into the desktop market," assuming that NT accounts for about 10% of the overall market. He added later that he was not setting a specific goal: "I was trying to make the point that we don't need a large percentage" of the desktop business to get off to a successful start in the NT market.

Multiuser VAXstation licenses had been expected by some to surface at the DECUS conference, but DEC officials said they will not likely become available until July at a price of $300 for each additional license. Some corners of DEC are reportedly miffed about the early leak because of concerns over its potential impact on revenue in the current fourth quarter, when the company hopes to make it back into the black. Ironically, though, the news got out at least in part through a customer letter signed by Demmer that was posted recently on the DECUServe bulletin board.

DEC CEO Robert Palmer got a laugh during his DECUS talk with a tale of how a wag had described DEC's too-honest sales technique: "People say you've got a great suit. I say, 'Yeah, but I've got this hole in my sock.'" Going forward, he promised, DEC will "get more aggressive" and maybe only "mention the hole in passing."

Among the multitude of multicolored ribbons handed out at DECUS to denote different types of attendees was a purple one signifying that the wearer was "best of breed." The organization's National Local User Group Council was the perpetrator of the dog show parody as a friendly spoof on the sheer quantity of real ribbons in the DECUS catalog.

Also in a satirical mood was the DECUS Security Special Interest Group, which gave out passes entitling the bearer "to wander the halls aimlessly." That is not such a hard thing to do in the cavernous confines of the Georgia World Congress Center.

Compiled by Craig Stedman, Computerworld senior editor, midrange systems.

[redacted]

Utilities

Millennium Information Systems, Inc. has introduced the Personal Computer File (PCF)-Toolkit, an IBM Application System/400-based utility.

According to the company, the PCF-Toolkit allows RPG III programs to process Lotus Developmeot Corp.'s 1-2-3 spreadsheets stored on the AS/400.

The product comprises proprietary objects and model source code that permits RPG III programs to read, write, delets and opdate informatioo in 1-2-3 spreadsheets, the company said.

PCF-Toolkit costs $1,295.

▶ *Millennium Information Systems*
15 Eastern Pkwy.
West Caldwell, N.J. 07006
(201) 882-8244

Software application packages

QCC, Inc. has announced the Credit, Receivables and Deduction (CREDT) Managemeot System.

CREDT can be used as a front-end applicatioo solution that can be interfaced with accounts receivable packages from leading vendors. Users can track, control and monitor earned and unearned deductions. CREDT operates oo IBM Application System/400s.

Prices range from $7,500 to $35,000 per client license.

▶ *QCC*
886 Washington St.
Dedham, Mass. 02026
(617) 329-7626

American Software has unveiled Amsoft Desktop, a Windows-based graphical version of its mainframe applications.

Dialog boxes, icons, scroll bars and radio buttons are some of the Windows features provided. Information from the mainframe can be shared with other applications from the PC environment.

Prices start at $4,000 for 10 users.

▶ *American Software*
470 East Paces Ferry Road
Atlanta, Ga. 30305
(404) 261-4381

Cyborg Systems, inc. has released DB2, Rdb and Oracle versions of The Solutioo Series, Cyborg Systems' client/server-based human resource managemeot system, payroll, benefits and time and atteodance software.

ANSI SQL is incorporated, and full support for the functionality of each vendor's relational database management system is provided.

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Prices for The Solution Series range from $50,000 to $360,000.

▶ *Cyborg Systems*
12th Floor
2 North Riverside Plaza
Chicago, Ill. 60606
(312) 454-1865

Data storage

Candle Corp. has announced Omegamon II for SMS, a product designed to monitor, manage and cootrol System Managed Storage (SMS) and non-SMS mainframe environments.

The product provides analysis of a real-time and historical perspective of all storage management issues. Features include complete cache analysis, the storage status adviser, hierarchical storage manager alerts, real-time analysis and an application view of storage.

License prices for Omegamon II for SMS range from $17,000 to $70,000.

▶ *Candle*
2425 Olympic Blvd.
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this crusty morsel,

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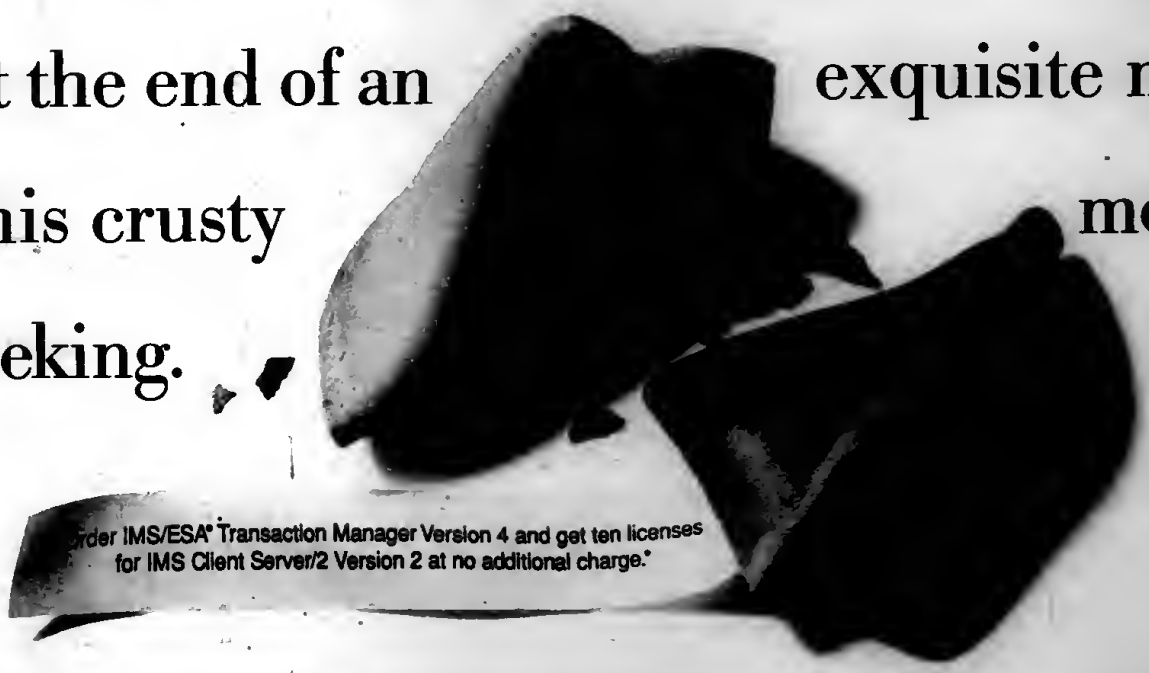

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IEF

Visual Basic gets boost from add-on

By Melinda-Carol Ballou
BEDMOND, WASH.

Sheridan Software Systems, Inc. has begun shipping VBAssist 3.0, an enhanced version of the company's add-on tool for Microsoft Corp.'s Visual Basic programming environment.

VBAssist is a Windows-based program that can be an integral part of Visual Basic, both visually and functionally, by attaching a button bar of tools to the main Visual Basic window.

New with VBAssist 3.0 are features for designing forms for database applications that include drag-and-drop capabilities for linking table columns. Instead of having to update each individual control's data source and data field in the properties window, VBAssist's Data Assistant opens a window showing all fields in the database associated with the data control. The developer clicks on the appropriate one with a mouse.

Using a Form Wizard, this version of VBAssist will automatically generate a database form. Developers can also create and modify table structures and view or modify data for any table. The data access tools in VBAssist work with all databases compatible with Visual Basic's Data Access Engine.

VBAssist 3.0 costs $179.

Garbage in, info out

Waste management firm tracks trash with Progress 4GL

By Melinda-Carol Ballou

Do you know where your garbage goes once the clanging outside your window subsides in the early morning? More importantly, does your waste management company know where it puts your trash?

Poor access to such information has a range of negative consequences, including higher costs to consumers when landfills are run inefficiently.

Enter John Sexton Contractors Co., a waste management company in Hillside, Ill., that used Progress Software, Inc.'s Progress fourth-generation language (4GL) to develop a Waste Management Information System that the company will bring on-line later this month.

The 62-year-old company, which has 18 sites in four states, needed an efficient way to organize data across a range of geographically dispersed systems. The information systems department opted for Progress as a development tool because of its flexibility, portability and ability to run across multiple platforms.

"We acquire other [landfill] companies on a regular basis and must integrate a tremendous number of systems," said Jeff Thompson, manager of IS at John Sexton.

"Progress runs on just about any platform, and the code is easily portable," he added.

ON SITE

John Sexton Contractors Co.
Hillside, Ill.

Challenge: To coordinate data across heterogeneous platforms at multiple landfill sites, medical waste plants, recycling, hauling and transfer station facilities and main corporate offices using only two developers.

Technology: Progress Software's Progress 4GL and RDBMSs running on HP 9000 servers and across PC LANs, initially.

Goal: To cut costs by running the business more efficiently and to address changing federal Environmental Protection Agency legislation.

The waste management software will allow John Sexton to coordinate data across many regional offices. Developed on a Hewlett-Packard Co. HP 9000, the software will allow regional offices to access data that is pooled from local offices using PC local-area networks. The LANs are connected to Unix servers and the Progress relational database management system at the regional offices via Transmission Control Protocol/Internet Protocol. Other server platforms will be supported eventually.

Weighing data

The data is registered at the local landfill, for instance, when a garbage truck arrives at a weigh station. The weigh station operator identifies the owner of the truck and those being charged for the bill as well as the specific waste type.

The operator then presses a button, the truck is weighed, and the operator registers where the waste will be dumped in the landfill. This process requires approximately four keystrokes for standard waste deliveries, Thompson said.

"The idea was to keep it efficient," he said. "There is a whole lot of work happening behind the scenes. Credit agreements may limit particular customers to certain types and volumes of waste, for instance. The parameters of the system may then issue a warning to the operator. Each site is able to customize those parameters."

Progress' flexibility is also important for the company to help it adapt to changing environmental regulations.

Using the waste management software, landfill operators also know where certain wastes are dumped in a landfill. This is important because if those wastes later become categorized as hazardous and require treatment, they can be located.

Access to the landfill also enables managers to charge more effectively for services and analyze compaction ratios by using data such as how much space is taken up by particular types of waste and how rapidly it decomposes.

Access to this data is also helpful for making the most of recycling programs. Managers are able to analyze how much they are paid for a particular commodity, such as aluminum. A medical waste facility run by John Sexton recycles 89% of the paper and plastic wastes brought in, for instance.

The company also refines the methane gas that results from the decomposition process at its landfills and then resells it to utility companies.

"We're able to figure how much we're pumping off. While other landfills burn it off, we use it as a small source of revenue," Thompson said.

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Sid Adelman

Budgets in unreal time

The setting is an off-site planning session for information services. The CIO has been severely pressured by his clients, the division managers, to deliver major new systems and to do so within the next year. The CIO, in turn, pressures his application development managers to commit to unrealistic budgets and unrealistic time schedules.

The application development managers have always had some problems with estimating and have usually been over budget. Now they are being asked to agree to budgets and schedules they know are far too optimistic. They are being told that if they cannot get the job done, someone else will.

Let's assume the application development manager did a diligent job estimating the project. Let's further assume that the manager is experienced and competent at estimating projects and that he did not inflate his numbers with the expectation that lower estimates would be forced on him.

Accepting the forced lower estimates is a lose-lose decision. If he did a good job of estimating, there is little chance that the deflated estimates will be realized. Even if the project is brought in on time and within budget, it will be thought this manager failed. If he agrees to the lower estimates, he is admitting that the original estimates were padded. His ethics are now in question. He is not only a bad estimator but also dishonest.

It is critical to have cost and time budgeted for unexpected contingencies, for the introduction of new technology and for anything that differs from the way the organization has been developing and implementing systems.

While there is no room for change in budget estimates and schedules, there is room for change in deliverables. It may be acceptable to break the implementation into multiple phases. This requires knowing and understanding the following:

1. The dependencies of functions upon each other.
2. Which functions are most important for the end users.
3. External influences such as political factors or a reorganization in a related department.

One response to a request for a lower cost or shorter delivery time might be, "The estimates were based on my understanding of your requirements. Could we prioritize the requirements and determine which should be deferred to later phases?"

A surefire disaster is giving the user some "bells and whistles" without providing the capabilities that are critical to running the business.

CASE tools will probably not lower your up-front costs. CASE tools are not magic. No application manager should expect these tools to improve schedules or budgets, especially on projects for which these tools are being used for the first time. Agreeing to estimates of higher productivity should happen only if the organization has measured and documented productivity improvements.

Additional resources, usually people from within the organization or outside contractors, can impact the schedule but will not reduce the overall cost. Putting more resources on a project usually increases the overall budget.

If estimates are generated with the help and support of the user divisions, there will be less disagreement. The users should also be active participants in setting priorities.

Does this approach mean that the person with the "can do" attitude has no place in this environment? No, but be realistic. The data processing battlefield is strewn with the hulks of failed projects and the bodies of the application development managers who were responsible for those projects.

We should not confuse a positive attitude with a lack of realism that will surely result in a failed project.

Adelman is an independent consultant in Sherman Oaks, Calif. He specializes in application development and data architecture.

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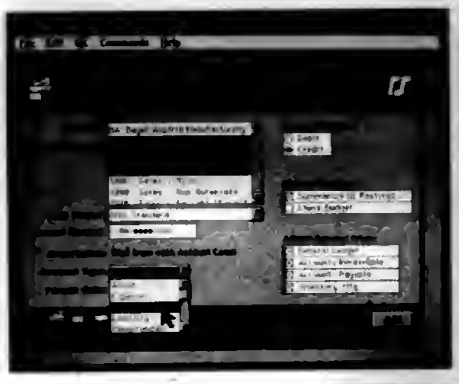

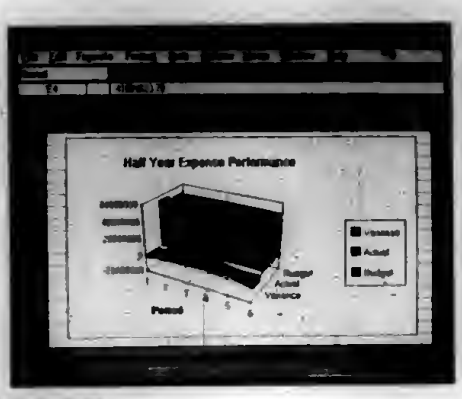

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Red Brick keys in on decision support

Updated Warehouse relational database focuses on large data sets

By Kim S. Nash
LOS GATOS, CALIF

Red Brick Systems recently announced Version 2.0 of its flagship Warehouse relational database, aimed at firms that frequently analyze large amounts of fast-changing data, such as retailers and banks.

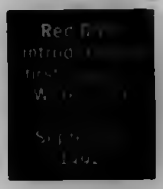
While Oracle Corp., Sybase, Inc. and other relational database makers say their products can handle both decision support and on-line transaction processing (OLTP) activities equally well, 7-year-old Red Brick focuses only on decision support.

Relational databases set up for heavy-duty OLTP cannot shunt that much data around as efficiently as a database designed specifically for that task, said Wayne Kernochan, an analyst at Aberdeen Group, a consulting firm in Boston.

"If a database is optimized for OLTP, then the speed and efficiency of queries for data analysis suffer, and vice versa," agreed Sandra Tucker, MIS supervisor for sales and marketing systems at Playtex Apparel, a division of Sara Lee Corp.

Playtex is about to go live with the first phase of a three- to five-year project to move all its data from an IBM IMS hierarchical database to various relational storehouses. The company decided to downsize from an IBM 3090 mainframe to a string of Unix-based Hewlett-Packard Co. 9000 servers. That meant converting data to a relational structure.

Tucker said she doubted that Oracle could handle the 5G bytes and three fiscal years' worth of sales and marketing data that will run on the finished system. "The things we were hearing [about Oracle] just weren't what we wanted for decision support," she said, referring to a recent internal Sara Lee information systems conference where technicians from all over the conglomerate gathered to discuss computing.



Another division had used Red Brick for more than a year with impressive results, so Tucker decided to follow suit. Oracle databases will be used for distribution and other corporate data, in a separate conversion project, she explained.

Ideally, Red Brick wants to co-exist peacefully with Oracle and Sybase, leaving OLTP to them. "We're meant to do different things," said Christopher Erickson, Red Brick's president and chief executive officer.

But Erickson acknowledged he is having a hard time fighting the marketing machines of larger relational DBMS makers that want to be all things to all users. To help differentiate Warehouse 2.0 from rivals, the following features were added:

- Incremental backup and restore functions to manipulate very large amounts of data quickly. Tests of a 75G-byte database showed that Warehouse 2.0 was able to process 1G byte of data per hour.
- Extensions to Red Brick's query language, called RISQL, and a report writer to rank and compare sales data, for example, year-to-year.
- Customizable stored queries to let users save the formulas for frequently used questions so they do not have to be rewritten every time.

Also available with Warehouse 2.0 are consulting services to teach users how to use the product as well as how to design databases honed for specific departments or types of queries.

The product is installed at about a dozen sites, with eight users in production, Erickson said. The average Red Brick database in production contains 10G bytes of data, he said, adding that some customers range up to 100G bytes.

The product has been in beta testing since March and is slated for general availability at the end of this month.

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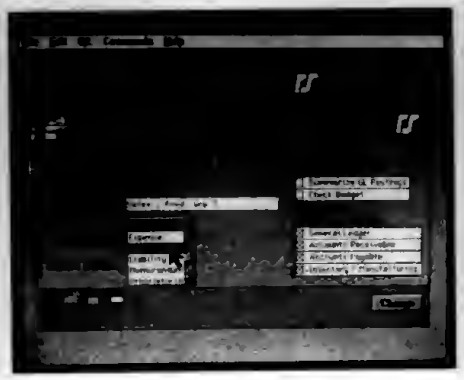

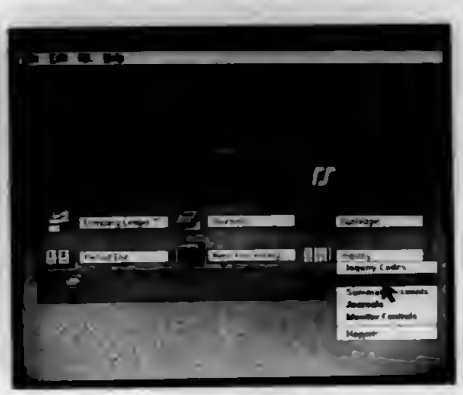

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ROSS SYSTEMS

Reverse-engineering

Interactive releases products for Ada

By Melinda-Carol Ballou

Interactive Development Environments, Inc. earlier this month released Design Generator for Ada and the latest releases of complementary products, Object-Oriented Structured Design/Ada (OOSD/Ada) and the Code Generator for Ada.

With these products, developers will be able to take existing Ada software and automatically reverse-engineer it into reusable designs and federally compliant 2167A documents, company officials said.

The Design Generator for Ada reverse-engineers existing Ada source code into the Ada Development Environment, creating both design diagrams for OOSD/Ada and notation for Ada and Data Structure diagrams. The generator is integrated with a reuse library and catalog that lets users create their own corporate reuse libraries from existing systems. It is also integrated with a document preparation system, which offers templates to provide documentation that is compliant with the U.S. Department of Defense's DOD-STD-2167A standard.

OOSD/Ada Release 1.3 includes accelerator keys, and the enhanced Code Generator for Ada offers performance increase of at least 10%, according to company officials.

The products currently run on Sun Microsystems, Inc. SPARCstations. The typical cost for a 10-user system, which includes eight floating licenses for OOSD/Ada, two licenses of the Code Generator for Ada and one license for the Design Generator for Ada, is $7,300.

Tools ease OOP use

Ilog offers problem solver, libraries of objects and rules

By Melinda-Carol Ballou

Ilog, Inc., a newly established U.S. subsidiary of Paris-based Ilog, announced a series of C++ tools that facilitate the use of object-oriented programming (OOP).

Ilog Views is a library of reusable and extensible graphics objects that augment traditional graphical user interface builders, allowing the display and manipulation of complex data. Ilog Views separates visual aspects of the object from its behavior to offer class reusability.

Ilog Views offers drawing primitives, graphics objects, view managers and advanced object modules.

It also provides a single application programming interface across standard windowing environments such as Windows, the Open Software Foundation's Motif and Sun Microsystems, Inc.'s OpenLook.

Ilog Solver is an object-oriented, constraint reasoning tool for solving complex reasoning problems such as scheduling, configuration and management. It searches for the most economical solution among a very large number of possibilities and dynamically adapts the solution as changes occur to data, officials said.

Problems addressed by Ilog Solver deal with finding the best allocation of resources, such as people and machines, subject to a set of constraints, such as time and availability.

These sorts of problems have traditionally been solved by generating all possible branches of a search tree, officials said.

Features of Ilog Solver include an object-oriented architecture for expressive modeling and implementation; the propagation engine; complete separation between modeling and solving strategies; reusability and extensibility of models, constraints and solving algorithms.

Ilog Rules is a library for embedding business rules into standard applications. With Ilog Rules, developers can automatically generate C or C++ code from an existing rules knowledge base. Ilog Rules' inference engine is a 90K-byte library that processes objects of the target application at a rate of 10,000 rules/sec.

Features of Ilog Rules include inferencing on native application objects without changing or duplicating existing code; customizable rule engine; and automatic C or C++ generation.

Ilog products are shipping now on Unix workstations and are priced at $5,000 for Ilog Views, $20,000 per license for Ilog Solver and $10,000 for Ilog Rules. The products will ship shortly on PCs.

[redacted]

Application development tools

Cortex Corp. has announced CoreVision 5.1, an application development tool that automatically generates full-scale commercial production applications to run in a client/server environment.

CoreVision is an application generator for Digital Equipment Corp.'s VAX/VMS environment.

This version enables users to develop applications from DEC's OpenVMS VAX servers and from Version 3.0 or higher of Windows clients, automatically generating source code for both platforms, the company said.

From the same design specification, CoreVision 5.1 can produce terminal/host and client/server applications.

Pricing begins at $30,000.

▶ *Cortex*
100 Fifth Ave.
Waltham, Mass. 02254
(617) 622-1900

IntelligenceWare, Inc. has started shipping Version 1.1 of Iconic Query.

According to the company, Iconic Query is a What-You-See-Is-What-You-Ask query approach. Instead of using a query language, users can point to and click on visual scenes.

Several new functions have been introduced including the use of icons, hypertext and three-dimensional data graphics for database access.

Iconic Query 1.1 has a report writer feature that acts like a word processor, enabling form-based reports and labels to be produced from within the program, the company said.

An executive information system feature, SQL union operations and parameterized queries are also featured.

Iconic Query 1.1 is available on IBM PCs and compatibles for $290, which includes Borland International, Inc.'s Paradox and dBase drivers.

▶ *IntelligenceWare*
5933 W. Century Blvd.
Los Angeles, Calif. 90045
(310) 216-6177

Computer-aided software engineering

Unisys Corp. has announced Line Development Assistant III (LDA III) software, an integrated computer-aided software engineering product for the rapid development of software solutions.

According to the company, the software integrates graphical analysis and design with development and testing tools on desktop solutions, providing the entire development life cycle with automated support.

From a single set of high-level specifications, the product can produce complete software solutions such as business logic, transaction manager, database and network and user interfaces.

LDA III costs $12,000 per license on a single-user basis. Site licenses costs $154,000.

▶ *Unisys*
Mail Station B260
Township Line and Union Meeting Roads
Blue Bell, Pa. 19424
(215) 986-5098

Code libraries

EMS Professional Shareware has started shipping the fifth edition of VBasic Library on CD-ROM or 10 1.44M-byte disks.

The collection offers 371 Microsoft Corp. Visual Basic programs, utilities and various file collections selected for Visual Basic users.

A directory database is provided. The directory can be searched by product name, vendor, type, full text search and release date. Several types of products are listed within the directory, such as data access, database, disk utility, graphics, icon utility, file compression, program utility and more.

The library costs $59.50 on CD-ROM or disk.

▶ *EMS Professional Shareware*
4505 Buckhurst Court
Olney, Md. 20832
(301) 924-3594

Compilers

Irvine Compiler Corp. has announced the ICC Ada/i960MX, a complete Ada software development environment for Intel Corp.'s i960MX microprocessor.

The product incorporates the standard features of a complete Ada compilation system with a code generator, code optimizer, an Ada compiler and an archiver.

According to the company, the ICC Ada/i960MX features a Profiler, an Ada Software Simulator and a Symbolic Debugger that offer a full system debug environment for the target hardware and for the host system.

Prices for the ICC Ada/i960MX Ada software environment start at $36,000.

▶ *Irvine Compiler*
Suite 270
34 Executive Park
Irvine, Calif. 92714
(714) 250-1366

Product shorts

Speech Systems, Inc. has released SPOT/VBX, a custom control facility designed to simplify the addition of speech recognition features to software applications developed using Microsoft Corp.'s Visual C++ development system for Windows or the Visual Basic programming system. The product is available with the Speech Systems PE400 System Development Kit (SDK), software tools that build speech recognition applications. Cost: $1,495 for The Speech Systems PE400 SDK. Speech Systems, Boulder, Colo., (303) 449-0481.

Integrated Computer Solutions, Inc. has introduced Builder Xcessory Version 3.0, a graphical user interface builder. The product provides full Open Software Foundation Motif 1.2 and internalization support and fully integrates C++ object-oriented programming with Open Software Foundation/Motif application development. The product is available on Silicon Graphics, Inc. platforms and SunSoft, Inc.'s Solaris platforms. Cost: $3,200. Integrated Computer Solutions, Cambridge, Mass., (617) 621-0060.

Virtual Technologies, Inc. has released Version 1.4 of the Sentinel debugging environment for Unix C, C++ and X Windows users. This version offers additional reports, detects more types of errors and debugs programs faster, the firm said. Cost: $395 to $995. Virtual Technologies, Dulles, Va., (703) 430-9247.

RECENTLY,
SOME HAVE REFERRED
TO LOTUS 1-2-3
AS SOMETHING OF
A SLEEPING GIANT.

LOTUS INTRODUCES 1-2-3 RELEASE 4 FOR WINDOWS.

THIS IS CLEARLY A TIME OF CHANGE FOR AMERICAN BUSINESSES.

To keep up with these changes, and the new ways of working they demand, business people need new and better-suited tools. Lotus® has responded by rethinking and re-creating the spreadsheet as a tool for individuals and for workgroups. 1-2-3 Release 4 incorporates over 4,000 spreadsheet user suggestions. It's dramatically easier to learn and use than any spreadsheet in history. It's much more powerful and productive. And it's the first spreadsheet that's actually designed to help people work together in impressive new ways.

THE FIRST CONTEXT-SENSITIVE USER INTERFACE.

Release 4 actually anticipates what tools and functions you'll need. Depending on what you're doing, 1-2-3 presents only the menu choices and **SmartIcon**™ palettes appropriate to the operation at hand.

Since the features you need are always easy to find and remember, you won't spend time clicking through menus looking for them. They're where you want them when you need them.

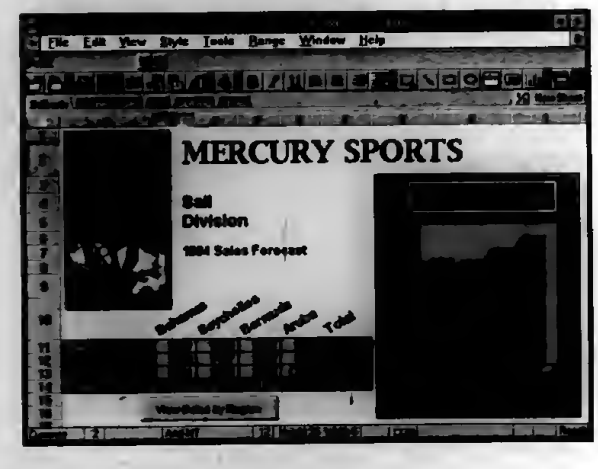
FEE. FI. F

IT'S MORE POWERFUL BUT VERY SIMPLE.

While adding dozens of major new features, hundreds of macros and hundreds of tools and @ functions, Lotus has actually simplified the way you work in a spreadsheet.

The open-handed mouse pointer closes when you grab the cell.

For example, Release 4 features an @ function pull-down menu to help you build spreadsheets faster. Cell copying is now a simple drag-and-drop operation, with meaningful visual feedback. And changing text and font attributes is done in one dialog box. (Excel often requires three.) So 1-2-3® is not only a lot friendlier and easier to use than any other spreadsheet, it's a significant advance over Microsoft® Excel in usability.



> *The SmartIcons in 1-2-3 for Windows are smarter, and Lotus' approach to swapping different toolbars in and out beats Excel's and Quattro Pro's.*
> —PC Computing 6/93

IMMEDIATE ON-SCREEN MANIPULATION.

A **Live Status Bar** on screen shows the attributes of any highlighted element.

Automatic | Arial MT

To make a change (like font, size or decimal points) you just click on the appropriate section of the status bar. Then scroll up to your chosen attribute and click again.

And unlike Excel, 1-2-3 R 4 includes

In-Cell™ Editing, so you can literally work *in* your spreadsheet. There's no need to go to the control panel. You can enter and edit any information right in the cell.

And you can go directly to any named range on any page simply by clicking on

> *Lotus 1-2-3's in-cell editing feature... is such an obvious and natural way of working...*
> –PC Week 5/3

the name in the exclusive **Navigator** menu.

ONE-STEP CHARTING.

With **One-Step Charting**, you can

NAVIGATE THROUGH 3 DIMENSIONS.

Anyone who works on multiple worksheets will appreciate the new 1-2-3 **Worksheet Tabs** which can be labeled with real words. So you can go directly to any sheet simply by clicking on the appropriate tab.

And Worksheet Tab names are then incorporated into formulas. All of which helps to keep 1-2-3's unique 3D

For example, to modify or create a query, you don't generate criteria and output ranges with cryptic commands. Just bring

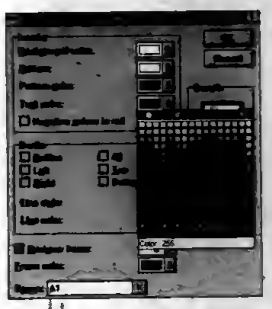
> *1-2-3 for Windows has always had more powerful database features than Excel or Quattro Pro, and now these features are also easier to use.*
> –BYTE 6/93

up the Query Dialog Box and select the fields and records by name. Changing your query is as simple as drag-and-drop.

With DataLens® drivers for dBase IV,® SQL Server, Informix, OS/2® Data Manager, Paradox® and more (including ODBC

O. FUM.

pick up all titles, data, legends and axis labels right from the worksheet to create a great looking chart the first time, automatically. No need to launch into some five step, semi-connected charting wizardry with



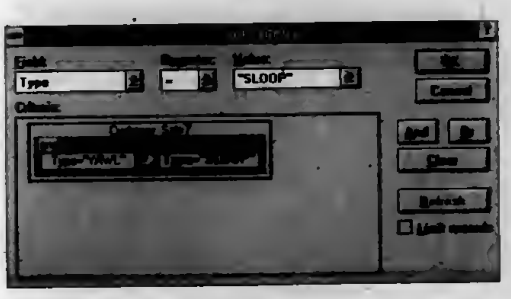
12 Height 14 Width 9

its own set of commands just to edit a simple chart. And you can edit the chart right in your worksheet because all elements can easily be selected and manipulated directly. And you can even choose from 256 colors.

technology simple and easy to use.

DATABASE FUNCTIONS MADE EASY.

The 1-2-3 database now has a new, completely graphical interface that makes using it significantly easier. Plus 1-2-3 provides a range of built-in tools that are powerful without being perplexing.



support), 1-2-3 is the first spreadsheet that provides a completely integrated model for directly querying both on-sheet and external databases.

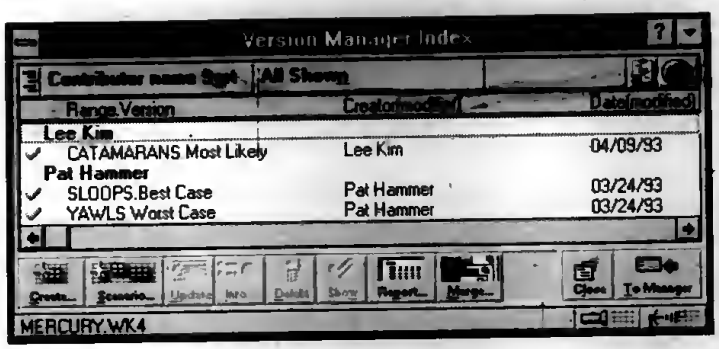
THE SMOOTHEST PATH FROM DOS TO WINDOWS.

If you're ready to make the move from DOS to Windows,™ 1-2-3 Release 4 is the way. It includes the traditional 1-2-3 ("/") **Classic® Menu** as well as complete file, style and macro compatibility with your DOS version.

And if you're networked, just turn the page and you'll see why the best spreadsheet for you is the only spreadsheet for your workgroup.

THE FIRST SPREADSHEET FOR WORKGROUPS.

With 1-2-3 Release 4, Lotus transforms the spreadsheet into the powerful workgroup tool people have needed.



IT'S NOT JUST A NEW VER

Combining the analytical power of 1-2-3 with workgroup features, users can now share spreadsheet insights and information and collaborate in ways never before possible.

VERSION MANAGER MAKES WORKGROUPS MAKE SENSE.

Ever forgotten why you used a particular number? Or wanted to track more than one value in a cell or range?

> *Version Manager is a natural way to extend single-user what-if tasks of traditional spreadsheets to the workgroup. It also makes Microsoft Corp's Scenario Manager in Excel 4.0 look like a toy by comparison.*
> –PC Week 5/3

Or suppose you've sent a spreadsheet to a co-worker who develops a whole new version and sends it back. How do you integrate it into your work?

You use our innovative **Version Manager**, that's how Version Manager tells you who did what when, and why they did it. It lets you save, label, track, mix, match, merge and comment on ranges, worksheets or entire files in ways that make sense to you. And it does it all without overwriting existing data.

In fact, whenever a new version is created, 1-2-3 automatically "stamps" the version with the user's name and the date and time it was created.

1-2-3 MEETS LOTUS NOTES. TOGETHER, THEY CHANGE EVERYTHING.

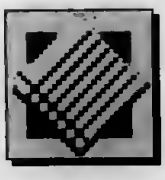
This is the way people ultimately want to work. Not just together. Concurrently.

If you have Lotus Notes,® the workgroup benefits of the new 1-2-3 take on even greater proportions. Besides utilizing the impressive workgroup power of Notes, there are specific Release 4 features that synergize to offer significant business advantages. Here are just a few.

Now different users can access and work on the same spreadsheet at the same time. Notes maintains file integrity and notifies you of changes made by others. So you know you're using the right numbers.

Notes also features replication. This means that even if you're disconnected from the network while you travel, you can stay up-to-date and still participate fully in the spreadsheet sharing process when you reconnect.

To maintain security and integrity, users can create access lists and grant varying privilege levels on a per-user basis.



And all this comes standard as part of the new 1-2-3 Release 4. No add ons, customizations or new application development is necessary.

WORKING TOGETHER IN SUPPORT OF INDUSTRY STANDARDS.

1-2-3 R 4 supports object-linking and embedding technology for both clients and servers. This enables users to display data from a 1-2-3 spreadsheet into any OLE client application such as a word processor or presentation software. 1-2-3 also complies with VIM and MAPI standards so it works with cc:Mail,™ Lotus Notes or any other VIM- or MAPI-compliant mail system installed on your computer. So you can send a worksheet, a range or an entire file as an e-mail message to another user.

All without ever having to leave 1-2-3.

> *The new release is fantastic. There's really nice integration using the (Object Linking and Embedding) functions with other applications.*
> *–Stacy Myers in Computerworld 5/10/93*

THIS IS THE BIG ONE.

> *1-2-3 leapfrogs Excel and Quattro...*
> *–PC World 6/93*

Lotus 1-2-3 Release 4 is here. Now And because it's network ready, one box is all it takes to upgrade all your users, whether they're working off a server or their own PC.

A FEW OF THE SPREADSHEET ENHANCEMENTS REQUESTED BY OUR USERS.

120 new @ functions (engineering, statistical, financial, calendar, informational, mathematical)
16 Designer Frames
256 color choices
64 fill pattern choices
250 new macro commands
Animated tutorial
AutoSave option
Center text over a range
Charting of 23 data points
Clean screen elements
Column, row and worksheet selection
Cross Tab
Customizable data fill
Define column aliases for database queries
Discontiguous range selection and charting
Displays up to five most recently opened files
Easier computed columns and rows
Enhanced Help system
Enhanced macro transcript
Escape from Help
External connections stored with query
Fill down, fill right
Floating, wrapping text boxes on sheet
Gradient fills
Group draw items
Help icon in dialog boxes
Icons in page setup
Interactive print preview
Justify labels and values left, right, center
Keyboard shortcuts
Long prompt text feedback in title bar
Lotus shared dialog box editor
Macro buttons on sheet
Named SmartIcon sets
New chart types
Numeric format WYSBYGI dialog box
Numeric up/down "clicker" on number fields
Partial insert/delete of rows and columns
Post selection from all range controls
Pre-built dialog boxes for application development
Print range stored in print settings
Print to fit columns
Print to fit rows
Print to fit page
Print to fit chart
Print charts directly
QuickMenus (context-sensitive right mouse-button menus)
Reads XLS spreadsheet files
Rotate cell contents up to 90 degrees
(Send-SQL) macro command
Shared dictionaries (across Lotus apps.)
Shows file links in dialog box
SmartIcon bitmap editor
Spell checker
Style gallery containing predefined style templates
Text wrap in edit line
True on-sheet draw layer
Vertically centers text within a cell
Windows-common dialog boxes
Wraps multiline text in a cell
"+" or "=" sign to start a formula automatically converts to "@" formula
@ function arguments supplied
(A more detailed list available on request.)

SION. IT'S A NEW VISION.

Call 1-800-TRADE UP, ext. 8858; for a free demo disk or to order your upgrade for just $119 direct from Lotus. Or visit your Lotus Authorized Reseller.

Lotus 1-2-3 Release 4
SPREADSHEET FOR WINDOWS

*Upgrade to 1-2-3 Release 4 for just $119 direct from Lotus.**

Lotus 1-2-3 Release 4 is joined by a full complement of the most powerful,

Lotus cc:Mail is the acknowledged world standard for electronic mail. Which explains why cc:Mail is used by 3 million people worldwide.

Lotus Organizer™ is rated best in the PIM category.

And Lotus Notes is the talk of the industry, redefining workgroup computing in practical ways that upgrade vital business processes.

Freelance Graphics, cc:Mail, and Lotus Organizer, 1-2-3 Release 4 completes a suite of advanced Windows applications that's years ahead of any competition.

For a limited time you can upgrade to SmartSuite 2.0 from any Lotus or competitive product** and receive a $50 rebate direct from Lotus And remember you can upgrade to 1-2-3 Release 4 for just $119, direct from Lotus. Just call

1-2-3 IS BACK. AND IT'S NOT ALONE.

BEST OF COMDEX Spring '93 BYTE

easiest-to-use business applications ever available to Windows users. That's not our claim, or an opinion. It's a statement borne out by users, reviewers and publishers every day.

Lotus Ami Pro® is consistently rated the best word processor for Windows. Well ahead of both Word and WordPerfect.®

For the last two years, Lotus Freelance Graphics® has dominated both Harvard Graphics® and PowerPoint® for power as well as ease of use.

All these Lotus Windows applications look, feel and work together like they were made for each other. Because they were. With only one user interface to learn. Common SmartIcons that work across applications. Seamless transport of data and charts between applications. And one spell-check dictionary that works across these applications.

RUN FOR IT.

Working Together™ is now a reality. And it comes in a box called Lotus SmartSuite.™

Packaged together with Ami Pro,

1-800-TRADE UP, ext. 8858.* Or run to your Lotus Authorized Reseller.

*Get all five award-winning Lotus Windows Applications plus a $50 rebate** direct from Lotus.*

Lotus 1-2-3 Release 4
SPREADSHEET FOR WINDOWS

*In Canada call 1-800-GO-LOTUS. Please have your credit card and product package ready when you call. **Offer expires 8/31/93. Qualifying competitive products are Microsoft Excel, Borland Quattro Pro (not including SE), Microsoft Word, WordPerfect, WordStar, Displaywrite, Microsoft PowerPoint, Harvard Graphics, Corel Draw, WordPerfect Presentation, Aldus Persuasion. Qualifying Lotus products include 1-2-3 (excluding 1-2-3 for Home) Symphony, Ami Pro, Freelance Graphics, Graphwriter and cc:Mail. © 1993 Lotus Development Corporation. All rights reserved. 55 Cambridge Parkway, Cambridge, MA 02142. Lotus, 1-2-3, DataLens, Lotus Notes, Ami Pro and Freelance Graphics are registered trademarks and SmartIcons, In-Cell, Lotus Organizer, Working Together and SmartSuite are trademarks of Lotus Development Corporation. Classic is a registered trademark licensed to Lotus Development Corporation. ccMail is a trademark of ccMail Inc., a wholly-owned subsidiary of Lotus Development Corporation. Microsoft and PowerPoint are registered trademarks and Windows is a trademark of Microsoft Corporation. dBase IV is a registered trademark of Ashton-Tate Corporation, a subsidiary of Borland International, Inc. Paradox is a registered trademark of Borland International, Inc. OS/2 is a registered trademark of International Business Machines Corporation. WordPerfect is a registered trademark of WordPerfect Corporation. Harvard Graphics is a registered trademark of Software Publishing Corporation.

Insecurity complex

CORPORATE LAYOFFS BRING THE FEAR OF EX-STAFFERS USING COMPUTERS FOR REVENGE. HERE'S HOW TO PROTECT YOUR COMPANY.

BY JAMES DALY

Sabotage isn't new. Only the motivations change.

With many financially strapped organizations in the throes of staff reductions, information systems managers and security professionals have a new beast on their hands.

"When jobs are eliminated, computer systems are frequently seen as a great place to take out your revenge," says Charles Cresson Wood, an independent security consultant in Sausalito, Calif.

Security experts say IS managers should take preventive measures to keep disgruntled employees from seeking revenge on the source code.

"Prevention and preparation will save you every time," says Sid Diamond, an independent security consultant in Stevenson, Md., who served as vice president of worldwide information services at Black & Decker Corp. during several staff reductions.

Experts say people are a company's greatest resource, but they can also be its greatest risk. If computer security is lacking during a major staff downsizing effort, the consequences for IS security personnel can be both embarrassing and damaging.

Wood recounts the case of a computer systems manager who was released from a Florida newspaper and later took a position at a competitor. Shortly thereafter, the management at his original newspaper couldn't understand why its competitor kept beating it with stories on which they expected to have an exclusive.

An examination of computer logs revealed that the account of the de-

Insecurity complex, *page 94*

ENTERPRISE MANAGEMENT

Managing Change
and Complexity

Two opposing forces in modern business are on a collision course: the need for specialized, localized hardware and software solutions, and the need to cost-effectively unite those information resources into a manageable business asset.

As IT managers respond to this challenge, they must cope with explosive growth in the number and diversity of devices and systems. Enterprise systems are becoming profoundly more complex.

Organizations today have a mixture of older, centralized systems and new, distributed systems—a wide variety of technologies provided by an even larger number of vendors.

The challenge is managing this diverse collection of resources. The nature of the problem requires a "best-of-breed" multi-vendor solution.

That's why the leaders in information technology listed here are committed to creating and providing Enterprise Management solutions.

What Is Enterprise Management?

Enterprise management is a strategy for integrated monitoring, measurement and control of multi-vendor networks and computer systems to serve enterprise business needs. It is a technological framework into which multiple management tools, applications and displays can fit, providing end-to-end management of network elements and resources.

Enterprise management requires an organizational commitment to, and consensus on, a common open management platform and a set of open management standards for use throughout the enterprise.

The Benefits

Implementing an enterprise management strategy provides considerable benefits:

▶ Continuously high levels of reliable and responsive service.

▶ Smooth incorporation of new client-server solutions with existing mainframe approaches. Your investment in existing mission-critical applications is preserved and augmented.

▶ Change and increasing complexity can be accommodated more quickly, without jeopardizing system and network availability.

▶ Greater optimization of network and system resources ensures high quality service is maintained at the lowest possible cost.

▶ Automation of management processes allows systems administration and operational costs to reduce steadily as your enterprise grows.

▶ Network and data security is enhanced.

What You Can Do Today

To achieve the benefits of enterprise management, take these steps:

▶ Develop organizational consensus on a strategy and on a management platform:

- working with your key vendors and carriers, develop a strategy for implementing this enterprise management architecture within your organization.
- establish purchasing guidelines that all parts of your organization can follow so that their evolving information systems can fit into the enterprise management approach.

▶ Select a common open management platform for use across your enterprise that:

- enables management of products and services from multiple vendors.
- is standards-based.
- enables integration of management tools and applications from multiple vendors.

▶ Review existing management tools and interfaces and prioritize upgrades that move the organization toward enterprise management in the most cost-effective and rapid manner possible.

▶ Favor distributed and object-oriented management solutions.

▶ Use management solutions that incorporate open management standards such as the Simple Network Management Protocol (SNMP), the Common Management Information Protocol (CMIP) and the OSF's Distributed Management Environment (DME).

▶ Automation is a key element in effective enterprise management. Move toward "self-managed" systems.

▶ Require the use of open management protocols in new information system purchases and deploy open management protocols in existing network elements, distributed systems and vendor-specific management systems.

Contact the leading vendors listed here. They can provide you with additional information on the enterprise management strategy that's right for your organization, and the products and services you need to implement it.

These industry leaders have come together to promote the business benefits of an Enterprise Management Strategy. They can be contacted directly or by using the reply card below.

The Partnership Legend illustrates relationships that have formed to provide these complex, multi-vendor solutions.

The Management Solutions Legend denotes some of the types of products and services each of these vendors contributes to a complete solution.

SOURCES OF ENTERPRISE MANAGEMENT SOLUTIONS

CISCO SYSTEMS
CiscoWorks — a comprehensive series of SNMP-based router management applications — enables users to easily manage, monitor and administer Cisco internetworks. 1-800-553-NETS
▼ ● ■ ⅄

IBM
IBM and the International Alliance Members lead the way in solving customers' management problems today, delivering SystemView conforming products, offerings and services. Call us at 1-800-IBM-6676 (x685)
⅄ ▲ ✕

OPENVISION
OpenVision products and services overcome the barriers to deploying production applications in distributed environments by addressing operations, performance, storage and security. 1-510-426-6400
■ ✕ ●

TECHNICALLY ELITE CONCEPTS
Technically Elite Concepts offers fully integrated LAN & WAN monitoring hardware and software applications with RMON based Ethernet and Token Ring solutions. 1-800-659-6975
▼ ● ■ ⅄ ✦ ✦

COMDISCO SYSTEMS, INC
BONeS® family of graphical simulation software tools to design, analyze, and predict the integration and expansion of Enterprise Networks. 1-415-574-5800
▼ ■ / ✦)

INTERCONNECTIONS
Leverage for NetWare integrates NetWare LANs and VAX/VMS systems, providing File Sharing Services, Network Print Services, and Terminal Emulation Services (TES). 1-800-950-5773
✦

PLATINUM TECHNOLOGY
PLATINUM technology offers a complete set of software tools and utilities for DB2, CMF, and other IBM databases, as well as innovative client/server tools. 1-800-442-6861
◗

Ungermann-Bass
Ungermann-Bass, the leading global enterprise network innovator, is the dominant supplier of network management software and high-end intelligent hubs. 1-800-777-4LAN
■ ⅄ ▲ ✦ ✕)

American Power Conversion
APC is the leader in power protection for networks. APC solutions include UPS systems, automatic shutdown and monitoring software, and remote management via SNMP. 1-800-800-4APC
▼ ● ■ ⅄ ✦ ✦)

Data General
Providing the tools to build your enterprise management foundation. For information, call your local Data General sales office or 1-800-DATA GEN
✕ ●

J&L
J&L's X Server developed to manage and monitor ChatterBox systems in a Novell network, can be accessed from any SNMP management station. 1-818-709-1778
✦

SNMP Research
Produces a family of network management products based on SNMP, SNMP Version 2, and other protocols including agent and network management station source code. 1-615-573-1434

UNISOL SOLUTIONS
UNISOL Site Management Utilities perform system and network management, security auditing, backup and restore, performance monitoring and resource accounting charge back. 1-310-542-0068

Applied Computing Devices, Inc.
ACD provides UNIX software platforms to deliver integrated applications for the 5 Specialized Management Functional Areas: Fault, Configuration, Performance, Security and Accounting. 1-812-232-6051
■ ⅄ ▲ ●

DEMAX SOFTWARE
With SecureMax and System Detective, DEMAX Software is the market leader in providing centralized security management solutions for networked UNIX and VMS environments. 1-800-283-3629
■ ✦

LANDMARK
The leader in enterprise performance management for IBM mainframe and multi-platform UNIX environments. Our products are integrated through a unique client/server architecture. 1-800 488-1111
■ ⅄ ✕ ✦

SSDS
The DESC, SSDS' enterprise-wide system management architecture, integrates heterogeneous net management platforms /software/applications, providing truly distributed systems management. 1-800-NET-DESC
▼ ■ ⅄ / ▲ ✦ ✕ ✦ ●

UNIX SYSTEM LABORATORIES
Distributed Manager™ solves the problem of managing users, software, printing, data backup and the myriad of administrative tasks across distributed systems. 1-800-828-UNIX
● / ✦ ✕ ■

ascom Timeplex
Unified architecture, intuitive management, and global support for robust enterprise networks that are simple to install and easy to operate. 1-800-669-2298
■ ▲ ✕

digital
POLYCENTER solutions provide open multi-vendor system and network management. From UNIX to Windows NT, NetWare to OSI. Digital delivers integrated management. 1-800 332-INFO ext. POLY
■ ▲ ✕

NetLabs
NetLabs is the leading independent supplier of standards-based network management solutions providing management platforms, development environments, and integrated applications. 1-800-447-9300
■ ⅄ / ▲ ✦ ✕ ✦ ●

SunConnect
SunNet Manager and the largest number of third party management applications available, provide system managers with distributed management solutions for complex heterogeneous networks. 1-800-241-CONX
▲ ●

WOLLONGONG
Wollongong's PathWay networking products give users of desktop computers access to computing resources over any departmental LAN or corporate network. 1-800-872-8649

CABLETRON
SPECTRUM is Cabletron Systems' protocol independent management system for proactive monitoring and control of multi-vendor, enterprise-wide networks. 603 332 9400
▼ ■ ⅄ ✦ ✕ ✦

EcoSystems Software, Inc.
EcoSystems provides integrated systems management software for client/server computing. Manage relational databases, UNIX computers, and networks from a central console. 1 800-368-4ECO
■ ✕ ✦

NETWORX
The critical first step in Enterprise Management is problem control. Paradigm automates your workflow process, providing an effective resolution strategy. 1-206-646-1898
■ / ▲ ✦)

Sun
As part of the COSE specification, Federated Services integrates enterprise-wide naming, filing, security services and networking in heterogeneous environments. 1-415-336-6755
✦

Northeast Consulting Resources, Inc.
Developing enterprise wide network and system strategies and architecture to help users and vendors create dynamic competitive advantage. 1-617 570-0780

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The weekly newspaper for Information Systems, delivering news, application information and product reviews for IS professionals responsible for implementing new technologies in their organization. For subscriptions call 1-800-669-1002

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Making systems perform with OMEGACENTER open enterprise management with OMEGAMON® analysis, OMEGAVIEW® status displays, and Automated Facilities™. 1-800-332-3235
◗ ✕

Fibronics
Fibronics provides InterView NMS for enterprise network management, PowerMIB development toolkit for integrating third party SNMP devices, and intelligent hubs and FDDI solutions. 1-800-327-9526
■

NOVELL
NetWare Management System for multi-vendor networks provides an integrated, scalable, system using Novell and third party developed management applications. 1-800-554-4446
■ ⅄ ✦ ✦ ●

SynOptics
SynOptics provides customers with powerful distributed solutions for managing intelligent hub-based enterprise networks running Ethernet, Token-Ring, FDDI or ATM. 1-800-PRO-NTWK
■ ⅄ ✦ ✦

NM Forum
NM Forum, a consortium, sponsors OMNIPoint, a multi-technology, multi-domain blueprint for end-to-end service management of LAN/WAN Networked Information Systems. 1-908 766-1544

OSF
The Open Software Foundation is a non-profit software research and development organization working to further open systems development and adoption. Call OSF Direct Channels, 1-617-621-7300.

CHIPCOM
Our fault-tolerant intelligent switching hubs and other networking products are specifically designed for facility networks — building or campus wide — without failure or downtime. 1-508 460-8900
● ■ ⅄ / ✕ ✦

HEWLETT PACKARD
HP and HP OpenView Solutions Partners deliver 180 integrated management solutions that give you management control of the networked systems in your enterprise. 1 800-637 7740
■ ▲ ✦ ✕

dicom
Dicom's interoperable solutions, including Token-Ring bridges and hubs, support enterprise-wide networking with built in management features and SNMP support. 1-214 423-7560
✦

SYSTEMS CENTER
Building standards-based, object-oriented management solutions for today's enterprise systems and for the transition to the client/server systems of tomorrow. 1 800 533-5128
● ⅄ ▲ ● ✕

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Partnership Legend

- ▼ Cabletron Spectrum
- ● Digital POLYCENTER
- ■ Hewlett-Packard OpenView
- ⅄ IBM NetView/6000
- ◗ IBM SystemView
- ✓ NetLabs/Overland
- ▲ NMF OMNIPoint
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Insecurity complex

CONTINUED FROM PAGE 91

parted systems manager had never been turned off. He had repeatedly accessed the original employer's computer to get information about the stories in progress.

As the economy continues to batter corporate America, security managers say, such cases will happen more often.

Dan Poulin, director of operations technologies at Bedford, Mass.-based Millipore Corp., says as job security grows thin, so does company loyalty. "There is no such thing as a guaranteed lifetime job anymore," Poulin says. Millipore underwent a three-year effort to consolidate three data centers. "Economies no longer afford that guarantee," he says.

IS managers and security consultants who have gone through the wrenching exercise of downsizing say the following tips can save face — and data.

Prepare early

Security chiefs also advise looking out for troublemakers early on. Virginia Hockett, information technology manager at 3M Co.'s Memory Technology Group, says security personnel must keep a sharp eye and ear out for early signs of trouble.

"As soon as you get a whiff that there may be staff cuts, get to the bottom of the rumors," says Brian Redler, director of security and operations at National Securities Clearing Corp., a financial services firm in New York. "If it's true, you're going to be faced with a very chaotic situation, and the last thing you want is to be unprepared for chaos."

Computer viruses, for instance, can enter any system unintentionally. But if you start getting them by the boatload, look out. Hockett says, "If computer viruses are cropping up at your business, shouldn't you be asking employees how they feel about their job?"

Unfortunately, these early warning flags are often the exception rather than the rule. Such was the case at The Coca-Cola Co.

"The security people were the last ones to come into the loop," says Cheryl Currid, president of consultancy Currid & Co. in Houston and director of information technology at Coca-Cola for eight years.

The omission — or late addition — of the security team in the downsizing equation can have damaging consequences, especially when workers feel they have not been treated fairly and are facing the prospect of unemployment.

The result is that the hours following the announcement of a reduction in staff are confused and disorderly — a situation that security professionals say can be easily avoided.

Treat departing workers with respect

"Make sure the workers know the terminations are due to economic difficulties and are beyond management control," says Fritz Wagner, manager of corporate electronic information security at Du Pont Co., which has undergone major staff reductions the past several years.

Experienced security managers know that their job is that of both technologist and psychologist.

Large-scale layoffs can be tough because in most cases, the workers are being let go because of unfavorable business conditions rather than any personal incompetence.

If management can foster solidarity in an organization, it's possible to prevent discontent from spreading, experts say. Security is best served when dissatisfaction and resentment are deflected away from the organization.

"There is never a sense that we have to lock the gates," Poulin says. "The general feeling is that people who are let go during downsizing activity are respected before, and they will be respected after."

That's not to say you should let your guard down. Wood emphasizes respect for departing workers — but cautious respect. At the time of an employee's departure, he says, user IDs and passwords for both computers and network access should be revoked. "It may sound elementary, but it's surprising how many organizations do a poor job of this, if they do it at all," Wood says.

When IS people are asked to shoulder the duties of departed staffers, they often let security slip through the cracks.

Departing employees should also be reminded of any confidentiality agreements, and proprietary information in their pussession should be collected.

"Even though a person may have developed an application, they need to remember that it belongs to the company, not that individual," Wagner says.

Staffers in sensitive positions who are not laid off but who could have loyalties to departed friends should be transferred to less sensitive posts, Wood says.

Team human resources

"Security personnel suspecting a wide-ranging loss of jobs should sit down with the human resources people and make sure that they understand that there will be very real security concerns," says Patricia Fisher, president of Janus Associates, an information security consulting firm in Stamford, Conn.

She says one West Coast manufacturer even has a system in place that automatically transfers personnel change-of-status information in a DB2 database into a RACF security-related computer privilege database. The program automatically revokes the privileges of users who leave the company.

In a former position, Redler developed a similar system that used a combination of electronic and paper links. In it was a checklist for company material that should be retrieved.

Redler says bank credit cards, long-distance telephone credit cards and building access control badges should all be canceled. Metal building keys, library books, computer system documentation and other property should be collected.

While many firms have checklists of such items, interconnected systems such as Redler's are rare.

Help departing employees find new jobs

Diamond also suggests putting job-finding programs in place to smooth departing employees' move to a new company and position.

"You have to help your workers switch from a negative mode to a positive mode," Diamond says. Typical on-site services include career counseling and resume preparation services, he says.

Wagner says he also tries to minimize the number of younger workers laid off by offering early retirement incentive packages to older employees. "Encourage the attrition end of the equation," he says. "We'll do everything in our power not to lay people off."

It's important to help employees realize that, however depressing the days following the layoff notices may be, they have a future, and there is hope.

"One thing I've always told my employees," Diamond says, "is that there is life beyond their job." ■

Percentage "Extremely Concerned"

Disgruntled employees	25%
Information leaks	18%
Network hackers	18%
Unauthorized system access	34%

Source: Datapro Information Services Group, Delran, N.J.

SYSTEMS MANAGEMENT

Meeting the new demands of Distributed Computing

Distributed systems demand the same level of management and availability that IS has historically provided in a mainframe environment. Yet the technical approach to distributed systems management is fundamentally different from that applied to centralized systems.

Hardware and software resources to be managed tend to be more numerous, widely-dispersed and provided by a wide variety of vendors. Put simply, old approaches to systems management cannot be incrementally extended to manage these new distributed systems. A new approach is required.

Why A New Approach Is Necessary

When compared to the centralized mainframe environment, tracking and intervention tools for distributed systems management still appear somewhat primitive - even as the number and variety of systems IS professionals must manage is increasing. At the same time, IS professionals are expected to provide backup and recovery services, fault isolation and repair capabilities, and updating procedures that provide levels of service similar to those users have come to expect from centralized systems. These demands all threaten to increase administrative and support expenses. And if these systems are poorly managed, there's a real chance such expenses may actually erase the cost reductions achieved through downsizing.

Effective distributed systems management addresses these issues. It provides the considerable business benefits of distributed computing within a context that allows for effective management of IT resources and costs.

What You Can Do Today

▶ Implement remote management solutions that bring the problem to the troubleshooter, not the other way around.

The Benefits

▶ Develop organizational consensus on an enterprise-wide open management platform that can interface with your legacy systems and newer distributed systems.

▶ Acquire management tools and applications for distributed systems that integrate with the open management platform you choose.

▶ Favor object-oriented management solutions.

▶ Place open management agents on systems, clients and servers throughout the enterprise that will communicate with your management platform.

▶ Take an application-oriented view towards the utilization of system resources. This allows you to target your management focus on areas likely to provide the biggest and quickest return to end users.

▶ Create automated responses to system problems - responses that automatically alert system managers when problems occur, or which resolve problems at the same speed they occur.

▶ In the switch from centralized to distributed processing, leverage the expertise, skills and methodologies of existing MIS personnel. And remember that legacy systems are likely to play a key role in mission-critical applications for many years to come.

The following companies are leaders in developing products and services that provide you with a solid foundation for effective distributed systems management. Contact them now for more information about the powerful systems management solutions they have to offer.

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Benchmarking etiquette

By Mitch Betts
ARLINGTON, VA.

"Benchmarking" with competitors to compare information systems and other business processes is in vogue these days, but it gives corporate lawyers the heebie-jeebies.

After all, the goal of quality benchmarking is for two companies to cooperate in the process of stealing each other's best ideas [CW, Nov. 30, 1992]. Talk like that gives lawyers nightmarish visions of lawsuits involving antitrust or theft-of-secrets charges, according to Kent M. Johnson, corporate counsel at Texas Instruments, Inc. in Dallas.

At a conference here last month, Johnson urged benchmarkers to adhere to high ethical standards, to avoid misunderstandings with partners and to steer clear of legal entanglements. The event was sponsored by the American Productivity & Quality Center in Houston and its International Benchmarking Clearinghouse.

In the IS field, benchmarking is all the rage in certain circles, including the Society for Information Management and regional groups such as the Chicago Research & Planning Group and the Omicrom consortium in Mountain Lakes, N.J.

Benchmarking is based on trust, openness and honorable intentions. But Johnson warned that the freedom with which benchmarking is now conducted could be eroded by newcomers with ulterior motives. "If a number of companies start abusing benchmarking with an attitude that they'll take advantage of the chumps, then we'll have increased skepticism, government intervention and lawsuits," Johnson said.

There have been no reported lawsuits that mention benchmarking, but Johnson said lawsuits are likely to ignore the benchmarking buzzword.

The best-known legal problem in the benchmarking world is antitrust law. Benchmarkers that are competitors must avoid discussing anything that could be construed as price fixing or collusion to limit competition, he said.

Lesser-known legal issues include protecting rights to intellectual property, such as copyrights, patents and trade secrets. Recipients of information should "find out if there are any strings attached to the ideas they get," Johnson said.

Benchmarkers trading "war stories" should refrain from criticizing companies by name, he added. Otherwise, they could face charges of "disparagement or trade libel."

Sources: International Benchmarking Clearinghouse; The Benchmark Partners, Inc., Oak Brook, Ill.

Moving into the realm of ethics, Johnson stressed that benchmarking partners should come to an agreement at the outset on the confidentiality of sensitive benchmarking data. He suggested benchmarkers ask themselves a few ethics questions: What processes ensure that the information will not be used for unexpected purposes? Would your source provide the information to you if he knew what you intended to do with it?

Even with precautions, it may take a while for corporate attorneys to become comfortable with cooperative benchmarking. "For the legal profession, this is a profound change in the way we look at the world," Johnson said. "Benchmarking is a phenomenon that doesn't make a lot of sense to lawyers." ■

N. Dean Meyer

Theory X lives on

In 1960, Douglas McGregor differentiated Theory X and Theory Y management — X being top-down and autocratic, while Y has faith in people and bets on their empowerment. After generations of MBAs trained in Theory Y have permeated the workplace, you'd think Theory X would be put to rest by now. But with each generation, it finds new ways to demean people and sabotage organizational effectiveness.

In the spirit of progressiveness, a large research and manufacturing firm made a companywide commitment to business process re-engineering. It appointed "process owners" at the senior management level and made process thinking the core of its cultural objectives and strategic business planning method.

Neat stuff, eh? But something's rotten in the state of process-land.

You see, in this company, operating managers in each country are still expected to produce their "numbers," and their objectives are all measured within a one-year time frame. How in the world can upper management get them to invest in process re-engineering?

And why would operating managers risk their autonomy to join with others in a cross-functional project? In the past, they've been known to invent the same computer system 50 times over — rather than band together and altruistically sacrifice control over their business for the sake of their shareholders!

And here's the real trouble: These line managers have control over all the IS resources. They aren't going to spend their money on projects that reduce their control and may or may not be in the interests of their local stakeholders.

Recipe for trouble

So how will the process owners bring truth and beauty to the heathen in such a hostile environment?

How about if top management shifts resources away from country managers and reallocates it into the hands of process owners? Then corporate process owners could fund the right IS projects that are cross-functional rather than country-specific.

Makes sense, right? In fact, this is the typical executive response.

Let's say it another way: How about if we give the process owners money so they won't have to sell their ideas to the guys who run the business, so they won't have to think of country managers as their "customers," so they can shove new processes down country managers' throats without regard to local needs, so they can hire IS to do their dirty work?

Dr. McGregor, does this sound at all familiar?

You can guess what the results will be. Those new processes will never quite work. Let's not call it sabotage. Let's just say the guys who know how to run the country operating units told us so.

Perhaps this is too dire. Perhaps the disempowered country managers will do as they're told: They'll simply take their hands off the wheel and let corporate drive their businesses. The results will be equally disastrous.

This disempowering approach unravels everything we have tried to build with the Total Quality Management movement.

Do we have a choice?

So what's the alternative?

How about if instead we change the metrics so that country managers have some incentive to improve their processes and leave the money with the guys who make it in the first place. Then process "consultants" (not "owners") can help operating managers win by facilitating the formation of consortia to buy process re-engineering and shared information systems.

Then country managers will share what should be shared and go their own way when it makes business sense to do so.

In other words, decisions will be left to the people on the front line. But at the same time, there is a reason to pursue shared process redesign.

True, the process consultants will have to work a little harder. They'll have to sell their ideas and convince line managers of the local benefits of process re-engineering. And management will have to think carefully about metrics and incentives to be sure that what's good for the company is good for line managers. But since when did good old-fashioned critical thinking hurt business?

OK, a systemic approach might seem much slower. It will take many years for process re-engineering to succeed instead of just a few years for it to fail.

Remember, in the trouble scenario, we gave process "owners" money to spend on IS to impose their ideas on others. A change as subtle as the allocation of IS resources can make the difference between X and Y. This is an example of the impact that the "internal economy" can have on corporate culture.

Centrally planned economies don't work. They make staff agents of central planners instead of a "business within a business," serving internal customers.

Staff should serve — not control — line management. This is ensured when both IS and process re-engineering staffs (who spend money) have to earn their keep from those on the front lines (who make money). In the long run, market economies work much better than top-down central planning. ■

Meyer is president of NDMA, Inc., an IS consultancy in Ridgefield, Conn.

NETWORK MANAGEMENT

[redacted]

Even if your network copes with your enterprise needs now, is it prepared to handle the way your organization will move and use information tomorrow? Your network will need to support applications far more complex and powerful than those you're using today. And it will need to do this flexibly and reliably, across organizational and geographic boundaries.

Without an integrated, open approach to network management, building and managing a network that will evolve successfully to meet these demands is impractical. Without effective network management, cost control is impossible.

The Benefits

Networks have become a crucial determinant of enterprise efficiency and competitiveness, which is why effective network management is now more essential than ever to the health and success of your organization.

Network availability, for example, is essential to mission-critical applications such as customer service, inventory management, EDI and product development. Network management enables consistent, reliable network service that organizations can depend on. An integrated network management approach will enable your enterprise to quickly respond to requests for new services to meet evolving business needs. This is especially crucial in a period when use of network-based applications is growing rapidly.

Integrated network management provides a foundation for higher levels of automation of administrative and operational tasks. It also improves responsiveness to user needs while substantially lowering support costs. Integrating your network management solution into a broader enterprise management strategy is far more cost-effective than investing in closed, vendor-specific solutions on an ad hoc basis. And it provides your IS department with the information necessary to track costs and optimize network resources while maintaining desired service levels.

[redacted]

What Is Open Network Management?

[redacted]

What You Can Do Today

▶ Address network management from a strategic perspective. Ad hoc solutions and their incompatibilities will ultimately cripple your network.

▶ Choose an open platform for managing your enterprise network that is compatible with other enterprise management choices. Gradually, eliminate proprietary management interfaces, instead choosing new equipment based on open standards such as SNMP and CMIP.

▶ Place standards-based management agents on existing network devices.

▶ Make the use of open management protocols a requirement for new network purchases.

▶ Acquire management tools and applications for networks that integrate with the open management platform you choose.

▶ Favor object-oriented network management solutions.

Contact the leading vendors listed here for more information. They are committed to helping you implement an integrated management approach to building and managing open, interoperable, multi-vendor networks.

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Executive Track

In Rancho Cordova, Calif., Ira J. Rothman has been named vice president of information technology at Foundation Health Corp. Rothman fomerly served as president of HCIS Consulting in Solon, Ohio.

Tom Lewis, a two-decade veteran of the manufacturing systems industry, recently joined The Strifler Group as a senior consultant specializing in manufacturing systems.

In his new position at the Dallas consultancy, Lewis, who most recently served as manufacturing systems specialist at Hewlett-Packard Co., will head a team charged with analyzing and defining software needs, evaluating and implementing systems and providing strategic and tactical business consulting.

Al Rodriguez, who has spent the past 10 years overseeing the development and implementation of an information systems operation at Graham-Windham, a New York-based family services agency, recently became director of the agency's Residential Treatment Center in Hastings-on-Hudson, N.Y.

In announcing his promotion, Graham-Windham President and Chief Executive Officer Joyce Lapenn noted that Rodriguez "is a terrific choice because he already knows the facility and the workings of the agency."

Mattel, Inc., an El Segundo, Calif.-based toy maker, has named John Phippen senior vice president and chief information officer for corporate systems worldwide. Phippen joined Mattel in 1985 as operations division vice president/controller. Most recently, he served as the company's IS senior vice president.

E. Bradford Ridley is the new assistant director of information resources at Boston-based Massachusetts General Hospital. Ridley comes to Mass General from Atlanta-based HealthQuest.

Have you or a colleague in the information systems field recently been promoted? *Computerworld* would like to share the news with the rest of the IS community. Please contact senior editor Neil Margolis at (800) 343-6474 to pass along the news.

Calendar

JULY 4-JULY 10

Client/Server and Distributed Database Management Systems. Troy, N.Y., July 8-9 — Contact: Office of Continuing Education, Rensselaer Polytechnic Institute, Troy, N.Y. (518) 276-8351.

JULY 11-JULY 17

1993 Banyan Technical Conference. Cambridge, Mass., July 11-13 — Contact: Banyan Systems, Inc., Westboro, Mass. (508) 898-1000.

11th National Conference on Artificial Intelligence. Washington, D.C., July 11-15 — Contact: American Association for Artificial Intelligence, Menlo Park, Calif. (415) 328-3123.

A Time to Restructure: The Annual Industry Future Conference. New York, July 12-13 — Contact: Gartner Group, Inc., Stamford, Conn. (203) 967-6757.

Client/Server Computing: Strategic Directions and Tactical Solutions. New York, July 12-13 — Contact: Ashlet Pearce, Gartner Group, Inc., Stamford, Conn. (203) 967-6774.

Image World Dallas. Dallas, July 12-16 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

Object Expo Europe '93. London, July 12-16 — Contact: SIGS Conference Office, New York, N.Y. (212) 274-0640.

Comdex/Canada. Toronto, July 13-15 — Contact: The Interface Group, Needham, Mass. (617) 449-6800.

Windows World. Frankfurt, July 16-19 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

JULY 18-JULY 24

Guide '93 Conference. Montreal, July 18-23 — Contact: Guide International Corp., Chicago, Ill. (312) 644-6610.

Windows World. Mexico City, July 20-22 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

Equipment Resources Planning Institute. Albuquerque, N.M., July 22-23 — Contact: Equipment Resources Planning Institute, Santa Monica, Calif. (310) 394-2997.

JULY 25-JULY 31

All about IRM '93. Aspen, Colo., July 26-28 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

AUG. 1-AUG. 7

Siggraph '93. Anaheim, Calif., Aug. 1-6 — Contact: Siggraph '93 Conference Management, Clarendon Hills, Ill. (708) 850-7843.

Tools USA 1993. Santa Barbara, Calif., Aug. 2-5 — Contact: Tools Conferences, Santa Barbara, Calif. (805) 685-1006.

Downsizing Expo. Santa Clara, Calif., Aug. 3-5 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Intelligence Files

In its own image

The mid-1980s saw an explosion of interest in imaging technology as several big companies in fields such as insurance and health care undertook pioneering engineering efforts.

However, the recession of the early 1990s shook up the electronic imaging market, as the industry was beset with financial difficulties and uncertainties surrounding platform migration.

The easing of the recession and major organizational changes among the computer vendor giants have opened new directions for electronic imaging. The continued interest in business process re-engineering is one driving factor in renewed interest in imaging, for example.

Source: "Implementing Image Technology for the 1990s," Computer Technology Research Corp., (803) 853-6460.

CIOs R.I.P.

Conflict with a chief executive officer is a surefire way to end a chief information officer's career. CIO turnover is already nearly twice that of other business professionals. But disagreement between technology and business heads over the best ways to make organizational and operational changes is making the situation worse.

The biggest disagreement is this: far greater acceptance of re-engineering among CEOs than CIOs. Other big problems for CIO longevity (now averaging two to three years) include unprecedented change, unaligned strategies, unclear objectives and uncertain timing.

Source: Gateway Management Consulting, (212) 880-9300.

Shopworn

At best, information systems functions do an average to below-average job on the shop floor, according to a new survey sponsored by the American Production and Inventory Control Society.

Nearly half of 117 electronic industry respondents felt the role of IS was insignificant in automating the shop floor, controlling the manufacturing process, implementing quality control, establishing a computer-integrated manufacturing environment or implementing concurrent engineering.

Half of the respondents said they felt that IS had little or no "manufacturing orientation." Two-thirds said IS was protective of its turf. On the plus side, nearly three-fourths said they believe IS has good relationships with manufacturing.

Source: Survey by Uma Gupta for the University of Central Florida, (407) 823-2679.

Telecommuter tips

As the use of telecommuting grows, particularly among small companies, following a few guidelines can make working from home even more attractive.

First, choose your telecommuters carefully and train them in the office beforehand. Second, communicate constantly. Electronic mail is a big plus here, and mandatory attendance at a weekly meeting also helps.

Lastly, keep an eye on regulations governing the use of telecommuters. For example, getting workers' compensation insurance for telecommuting employees can sometimes be a problem.

Source: *Inc.* magazine, June 1993.

Great for real estate

One of the best vertical markets to tap the potential of geographical information systems (GIS) is the real estate industry. Service providers such as appraisers and brokers can use the technology as a competitive arm to bring in more business. Other corporations with significant real estate holdings can use a GIS to more profitably manage their property. Currently, few of the players in the real estate industry are tapping GIS' potential.

Source: *Business Geographics*, May/June 1993.

Multimedia manuals

Electronic books could be a big money saver. A new, confidential study of more than 250 major corporations found that converting paper manuals to an electronic multimedia format can slash distribution and updating costs. One company reported annual savings of $87,500 from putting a 200-page manual on-line, according to Positive Support Review, a Santa Monica, Ca., consulting company.

Source: Positive Support Review, (310) 453-6100.

Stuck on STICIs

Contrary to current press reports, graphical user interfaces will not forever rule the world. STICIs, or Self-Teaching and Interpretive Communicating Interfaces, are the next wave in computer interfaces.

A STICI (pronounced sticky) uses intelligent agents to track how users actually use a software program, then adapts the program to that user.

While agents have been a feature in some proprietary mainframe systems, these features are coming down to the PC level and are even being designed into future versions of products such as Microsoft Corp.'s Word for Windows word processor.

Ultimately, agents will be used to change PC use from a "do what I say" model to a "do what I need" one, making the computer interface truly user-friendly.

Source: "PC Market Update," a newsletter published by BIS Strategic Decisions, Norwell, Mass., (617) 982-9500. Jeffrey Henning, editor.

With the emergence of distributed, multi-vendor computing environments, the creation of a standards framework to facilitate their effective management became a top priority. As a result, leading vendors, working through the Open Software Foundation (OSF), have developed a set of open, vendor-neutral standards known as Distributed Management Environment (DME).

DME was conceived to get the most out of today's advanced distributed computing technologies, open standards, interoperability and object-oriented technologies. Its standardized framework represents an industry consensus on application program interfaces (APIs) and protocols for open management. DME is a 'living' standard, evolving as technologies evolve, enhancing the latest industry developments.

Why DME Works

DME builds on existing standards. It is not an alternative to other standards. Rather, it represents a complementary approach that encompasses existing SNMP and CMIP standards and endorses interfaces devised by the Network Management Forum, X/Open and others.

DME is the product of a multi-vendor, consensus-based process. As a result, DME maps to your computing environment and manages growth in multi-vendor systems and networks. And because DME is the product of industry consensus, it accelerates the process of reaching consensus within your organization.

DME is based on a comprehensive set of requirements developed through an open, industry process to meet specific objectives and address real needs.

DME is vendor neutral. It enhances competition in the management market. This will result in lower costs and better solutions for users.

DME Distributed Management Environment

The Benefits

DME's wide-ranging benefits include:

- A scalable, distributed architecture that can accommodate growth in multi-vendor networks and distributed systems.
- Better management, interoperability and integration through the implementation of common management services and standardized protocol and object definitions.
- Reductions in time and costs for system administration and training.
- Tightly integrated solutions utilizing object-oriented design, for easier and more flexible integration of scalable, distributed, multi-vendor architectures.
- Greater longevity of systems resulting from standards-based, backwards compatibility.

What You Can Do Today

No matter where you are in the development of your network, we suggest evaluating DME as you build your enterprise management strategy. Portions of the DME will be available during 1993 from a number of vendors. Complete implementations of DME will begin appearing in 1994.

Contact the Open Software Foundation for more information on DME and how it can provide you with a framework for managing growth in a multi-vendor systems and networks. Or, contact these leading vendors who have committed to supporting DME.

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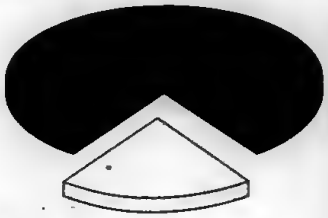

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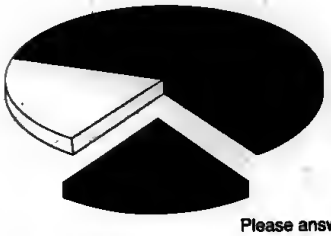

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TOGETHER

By Tom O'Connor

You have to face the fact that you've got a lot of competition. Everyone is claiming he can handle what were once the sole activities of the information systems department — application system design and development, maintenance and so on. The competitive threat is coming from outsourcers and even your own users, who have gained power and technical experience through departmental computing.

In a worst case, these rivals can diminish your role in a company, as evidenced by shrinking budgets and IS reorganizations. For instance, at a time when information is one of an enterprise's most valuable assets, IS budget numbers are not growing significantly. Cambridge, Mass.-based CSC Index, Inc. says the average IS budget will grow 2.5% this year, while oil and energy industry budgets are down 5.3%. IS departments are having a harder time justifying application system upgrades than business departments are having justifying PCs, PC software, local-area networks and departmental servers.

You need to strengthen your prowess in areas in which no one else can be as valuable. It's time to re-engineer for the future.

Start fresh. Look at needs to see if there are chances for you to contribute in new ways.

•**The stovepipe syndrome.** Business depart-

IS stronghold, *page 103*

A 23-year veteran of the computer industry, O'Connor is currently manager at KPMG ExIS, an information systems consulting unit of Peat Marwick Main & Co. in Palo Alto, Calif. He has also held system development and technical management positions at Electronic Data Systems Corp.

Outsourcers, end users and other competitiors are grabbing some of your traditional duties, such as application development. Only by concentrating on your UNIQUE strengths — integration and implementation — can you stay valuable.

Just don't expect it to roar.

These days, organizations are seeking to become swifter and more ferocious.

But superficial changes are unlikely to produce results. Especially when information technology is part of the plan.

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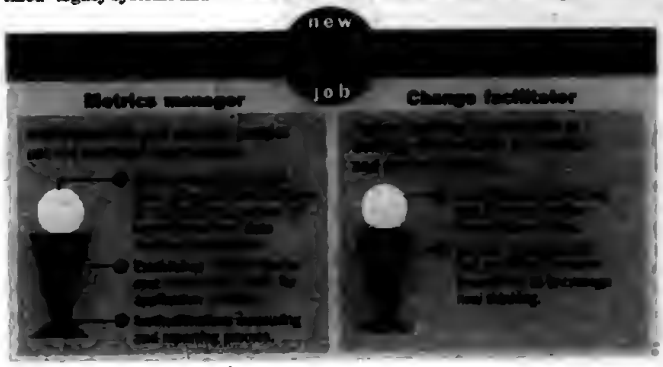
IS stronghold

CONTINUED FROM PAGE 101

ments have a very narrow field of vision. Because they focus so closely on their specific domain and responsibilities, they don't know how the department next door operates or even whether they can rely on each other. This isolationist attitude can create big trouble in the enterprise as a whole.

Unfortunately, the IS department itself may be the root of the problem. "Wart-filled" legacy systems and IS' insistence on limits to what it can or will provide to business departments have forced end users to find their own way.



For instance, a manufacturing firm's finance department, after years of poor IS response to maintenance requests for a billing system, took matters into its own hands.

While the unit now has its own list of customer billing addresses, however, the company as a whole suffers from multiple views of customer data.

Another finance department, this one in a casualty insurance company, set up its own system for tracking dividends, in essence making the information departmental data, not corporate data. It did not reconcile the information with other perspectives and views of dividend-related information. The company ended up with inconsistent information that has affected decision-making.

I worked with one insurance company where two of four independent departments reversed the standard definitions for policy "buy out" and "close out." Needless to say, this undermined corporate policy.

I have seen too many companies where departments have their own customer lists, product lists, vendor lists, personnel lists, budgets, revenue and expense models and other redundant (if they are lucky) or inconsistent (if they are unlucky) data not to think the problem is epidemic. How many lists of customers or vendors does your company have in its various departments?

It's a wonder companies can function at all, let alone be successful.

•The ripple effect. Part of the problem with all this scattered information is that there is no pervasive vision for how things *should* be. While business departments are buying, building and implementing their own systems, very few appreciate the scope and implications of an implementation, even a small departmental one. Implementations require a systems approach but aren't getting that.

Departments suffer setbacks because logistics and complex project management are rarely, if ever, part of a business staff's job description.

System implementations are complex logistics projects. Tested software, hardware capacity, telecommunications, backup and recovery procedures, system administration, training, security authorizations, clerical procedures, business management processes and help desk support all need to be in place at the right time.

So it's not enough to put in a customer service system; its effectiveness is directly tied to ensuring managers know what to do with it.

Pick a pony

So here we are. As former President Reagan might have asked, "Wellll, where's the pony?"

I see a pony. I see some real needs that require just the skills and experiences IS departments should and could have. I see a need for a broad, corporatewide view of systems to counter the narrow view of individual departments. I also see a need for implementation expertise to anticipate and avoid new system sinkholes.

I suggest that the IS department change its name to the Integration and Implementation Department to fulfill a vital role within corporate enterprises.

The integration portion builds on your broad, comprehensive view of the entire enterprise. You're the ones who know all the uses of customer data, product data and so on. You understand the value of data integration across applications and departments for the good of the enterprise. You appreciate the business value of sharing data across departments.

You can be the ones to prevent corporate officers from meeting to discuss bookings, only to realize they each have their own sets of numbers that don't agree. You can be the catalyst, for instance, to getting a single, precise definition of what a "booking" is. You can network departmental computers seamlessly.

The key to integration is perspective. The tools of integration are data administration and networks. Why not put your emphasis in these valuable areas?

Expertise required

Implementation needs your trained eye as well. You understand that it takes a lot of components (technology, procedures, management, administration, training, support) to get to a business system. You know what has to be scheduled, sequenced and completed to get something running. This is a complex discipline.

You're the ones who understand that technology is not the entire system but rather a core surrounded by other manual and management systems; leave out one part, and the project goes bust. You have the systems approach that is vital to every implementation. You should attach a high priority to providing this valuable contribution to your enterprise.

Integration and implementation can form the foundation for a rejuvenation of your value to the enterprise. ■

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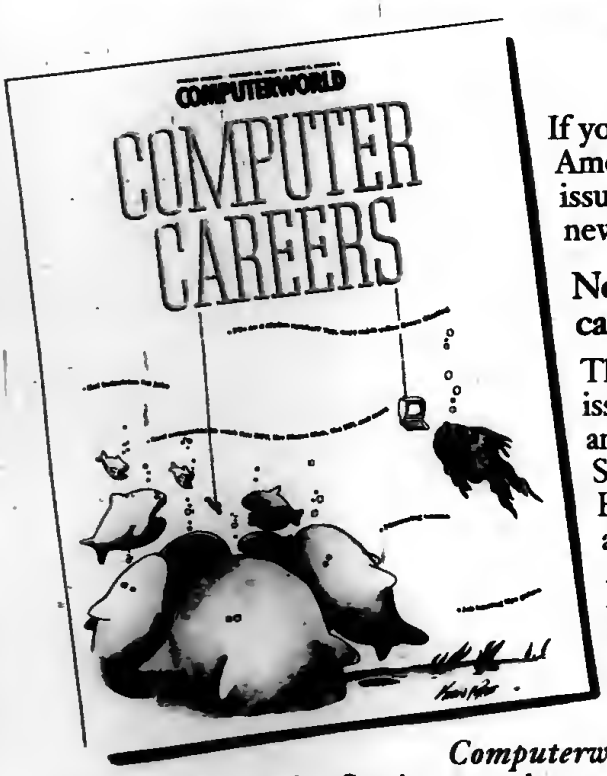

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AS/400 no longer on its own

skills outlook AS/400

By Mary Brandel

NO ONE IS EXEMPT from the client/server imperative — not even Application System/400 specialists. It may just be a glimmer in the information systems director's eye, but client/server will eventually catch up with you, especially with IBM's initiatives to make the system more server-like.

"I expect [our programmers] to grow and understand that the AS/400 is not the center of the world," says Crystal Kennedy, director of IS at White Plains, N.Y.-based Dannon, Inc., which is developing client/server applications with its IBM AS/400 as the back-end processor.

Not every AS/400 site will take the client/server route, of course. And even where the shift does occur, not every programmer and analyst will be involved. But if you want to get ahead, you've got to have your head up.

"Within any given organization, a group of AS/400 programmers will need to be retrained," says Joseph Gottlieb, vice president and service director of open computing and server strategies at Meta Group, Inc. in Westport, Conn.

What should you be doing to make that cut? Keep up with the changes now on the drawing board for the AS/400, the most important of which include the following:

•Learn a new environment

One of the biggest and most imminent is the Integrated Language Environment (ILE). With ILE, IBM essentially rebuilt the underlying process model of the AS/400 to allow client/server and object-oriented programming.

"ILE will allow subroutines to be written once and used time and time again, independent of the language," says Steven Salk, project manager of application strategy at IBM.

Other skills options

- New RPG versions
  - RPGILE is now free-format.
- PC Support
  - With PCs accounting for 39% of AS/400-attached devices, learning this communication system is crucial.

So far, not many portions of the operating system use ILE, and only a C compiler is shipping, although RPG and Cobol compilers are due in the future.

But now is the time to start navigating the new environment. "People need to get familiar with ILE compilers because they're going to be necessary for client/server applications," says Teresa Elms, president of Elms Information Services Group in San Diego.

•Turn in your RPG tools

Learning new languages will also be important. "Currently, less than 1% [of AS/400] code is in C, but as client/server applications become important in this environment, programmers will need familiarity with C and to start writing at least some code in C," Elms says.

•Get to know your front end

Familiarity with graphical user interfaces and front ends is possibly the largest requirement that will be made of programmers, Salk says. "Programmers will need an understanding of Presentation Manager and Windows interfaces as well as the connectivity between the host and the workstation," he says.

Kennedy says, "What we'd like to do is put application front ends out on the network and access data on the 400 through gateways rather than replicating it on the network."

•Database intricacies

Other changes may lie ahead, but right now "the big challenge is to continue to integrate the AS/400 with other database environments," Gottlieb says.

At Dannon, that means understanding gateways. The plan is to enable users to access data transparently on any one of the networked databases, which include facilities in Ohio, Texas and New York.

To achieve this, Kennedy says she plans to use Progress Software Corp.'s fourth-generation language, Progress 4GL, which recently incorporated an AS/400 gateway as well as a gateway to Sybase, Inc.'s database, which Dannon recently implemented. "We're looking at our programmers to understand what gateways are and how they work so that they understand the impact of things like multiuser updates," Kennedy says.

•Network necessity

As the AS/400 is pulled into collaborative relationships with other database platforms, networking becomes a major issue.

Programmers will need to learn networking details of the non-AS/400 world, Elms says, including Transmission Control Protocol/Internet Protocol, which is much more primitive than Systems Network Architecture; Network File System, which is the Unix standard for file transfer and remote file management; and Simple Network Management Protocol for Unix network management.

And these are just the near-term concerns. Look out three to five years, and you'll see the Open Software Foundation's Distributed Computing Environment coming to the AS/400 as well as true object orientation, which is an IBM statement of direction.

Object orientation is "a ways off," Salk says, "but the point is that our programmers will have to understand [object orientation] and [object-oriented] techniques for providing good client/server graphical applications."

Where to learn new skills

A good place to start is the Common User Group, an IBM user group serving the AS/400, RS/6000 and System/36 user communities. It holds two conferences each year.

Sept. 27-Oct. 1 New Orleans	March 21-25 Anaheim, Calif.

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Brandel is a *Computerworld* senior editor, features.

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In pursuit of troubleshooters

By Michelle Louzoun

to

If you're a local-area network troubleshooter who's kept up with LAN and wide-area network communications, there's a market for your talents. "Troubleshooters are in demand," says Kim Knowles, vice president of TTS Personnel Services, Inc. in New York. "It's one of the few information systems positions where demand has remained steady."

Where the jobs are

There isn't just one position that is dedicated solely to troubleshooting, however. Instead, the responsibility is shared by network operations staff, help desk consultants, LAN administrators, LAN engineers and network planners.

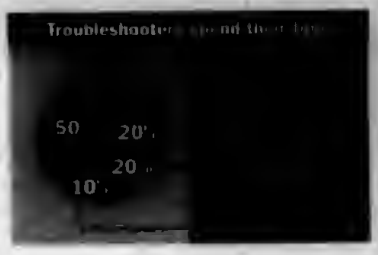
Only 10 years old, this area has dramatically changed. "When I started working as a troubleshooter, the job was more physical, and problem determination was easier," says Joe Montalto, a telecommunications specialist at Bankers Trust Co. in New York. "You could usually solve a problem by resetting the power or replacing a cable. Now you have to dig deeper."

Montalto experienced a situation where 12 users were unable to read their electronic mail. After determining it was a Token Ring problem, he checked the router connection and the configuration program. The router was functioning from a physical point of view, but "there was a software filter that prohibited users from gaining access to the E-mail," Montalto says. "I reprogrammed the router to remove the filter."

Know the basics

Troubleshooters say that the most important technical requirement is understanding PC and LAN operating systems — specifically, how the system's memory works and how to set up programs. Familiarity with the common transport protocols is also a plus. From a hardware standpoint, this means knowing about wiring schemes for Ethernet or Tokeo Ring and being able to set up and monitor hubs and concentrators.

Knowledge of network diagnostic tools is also mandatory. The more popular products include LANalyzer from Network Communications Corp. in Bloomington, Minn., and the Sniffer from Network General Corp. in Menlo Park, Calif.



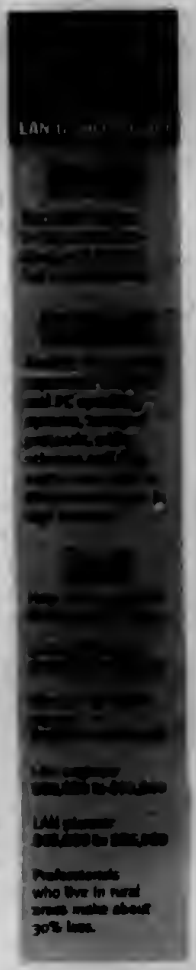
If you'd like to increase your salary, learn about LAN-to-WAN communications — specifically, setup and maintenance of routers, bridges and gateways. A troubleshooter who understands this can earn up to 75% more than a troubleshooter who doesn't, Knowles says.

Technical knowledge alone won't make someone a good troubleshooter, however. "You can learn the technology on the job," says Michael Sugden, network manager at Sid Peterson Memorial Hospital in Kerrville, Texas. "But the one thing that can't be taught is general logic or horse sense."

"You need a systematic approach to problem solving so that you don't overlook the obvious," concurs David Paparello, network manager at ADD, Inc., an architectural firm in Cambridge, Mass. "I've seen people redesign the system when all they needed was to plug in a power cord."

If you're ambitious, LAN troubleshooting is a good position to be in. "This is not a niche role," says Mark Theoharous, a manager for the network solutions practice at Andersen Consulting in Chicago. "You are exposed to an array of systems, applications and business areas. There's no reason why a LAN troubleshooter couldn't go up to the executive level."

Louzoun is a free-lance writer based in Great Neck, N.Y.



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Chicago: 'My kind of town' for mainframers

By Jill Vitiello

The popular song claims Chicago is "my kind of town," and information systems professionals who live and work in the Windy City may feel a strong affinity to it. With its diverse and recession-resistant economic base, Chicago has fared somewhat better than big cities on the East and West coasts. That doesn't mean things have been easy for Chicago IS professionals, however. Downsizing and hiring freezes have taken their toll.

The city is host to many kinds of companies that employ sizable numbers of IS professionals. For the most part, mainframes dominate, but more and more Midwestern firms are moving toward the PC local-area network environment.

This shift, which is proceeding at a cautious pace compared with other regions of the country, is a mixed blessing for Chicago's IS workers. It has opened opportunities for business systems analysts with PC and networking experience at some of the most prestigious companies in the U.S.

Many companies, including First National Bank of Chicago, American National Bank and Trust, and Chicago and Northwestern Transportation, Inc., have recently hired or are still searching for experts in these areas.

However, Chicago's gradual migration to PCs has put many of those with mainframe talents in a stagnant unemployment pool as companies downsize IS departments. "It used to be that if you could spell 'Cobol,' there was a job for you," says Doug Baniqued, president of CompuPro, an IS recruitment firm in Chicago. "Today I'm receiving calls from senior-level, double-degree, excellent people, and I can't help them because they don't have the hands-on skills employers want now."

Mainframe loyalty

Mainframers who have held onto their jobs are not leaving them. Of course, the job market is inhospitable to them now, but that's not the only reason they stay. Many Chicago firms express a staunch commitment to mainframe technology.

"The client/server environment doesn't make sense for us," says Edith DeBoard, manager of IS at Bacon's Information, Inc., a media data bank. "Our bread and butter is our media bank, and everybody has to get at the same files."

DeBoard's skepticism of the client/server route is common in Chicago. "We have no interest in working up a plan to convert all our mainframe applications to the PC," says John Hermann, vice president of management information systems at Hart Schaffner & Marx Corp., a manufacturer of men's clothing.

To hold the line on expenses, Hermann plans to keep his department at 20 people and won't budget for future additions. Not all mainframe shops are restricting growth, however. First National Bank of Chicago, which is largely mainframe-dependent, has been hiring Cobol programmers and many other IS professionals during the recession, says Sheila Hamilton, human resources officer and senior recruiter.

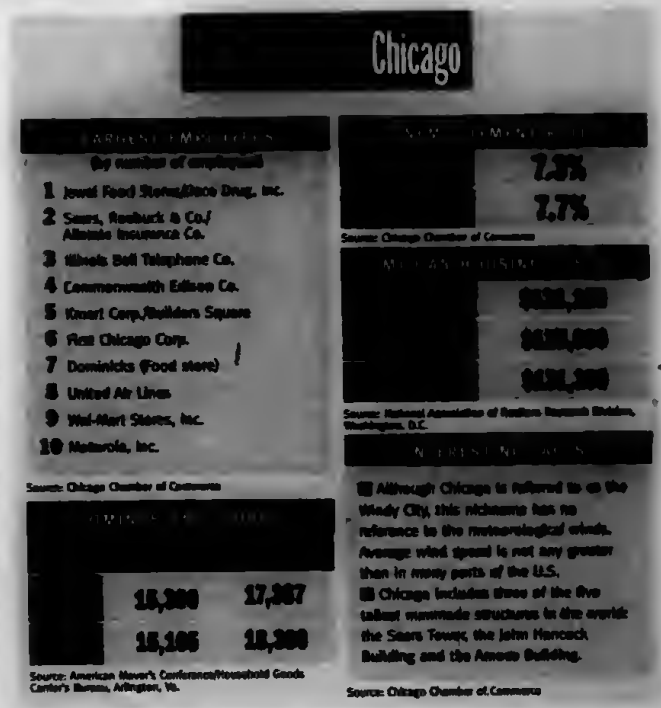
Hamilton looks for traditional mainframe and PC LAN experts who combine excellent technical skills with interpersonal aplomb and business acumen. "We are not hiring people who want to stay in a back room and code," she says. "All positions in IS require user interaction, so we search for people with a professional flair."

Promote from within

Mainframe loyalty is not the only loyalty in Chicago. Hiring managers are typically long-service employees who report little turnover. For example, Bill Duran, director of IS at USG Corp., a building materials manufacturer, joined USG 20 years ago in the report distribution area and worked his way up. He says he believes in hiring from within and routinely rewards USG employees who have earned IS-related degrees at night.

But what about those for whom loyalty is not an option? IS professionals who've lost their jobs in Chicago have been resourceful, says Michael Martell, placement manager at the IS division of Robert Half International. Many become independent contractors, find temporary employment or return to school.

Vitiello is a free-lance writer in East Brunswick, N.J.



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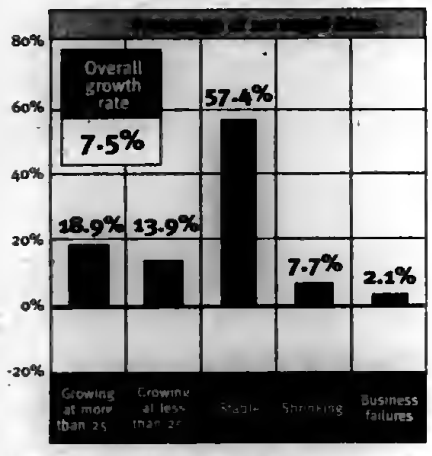

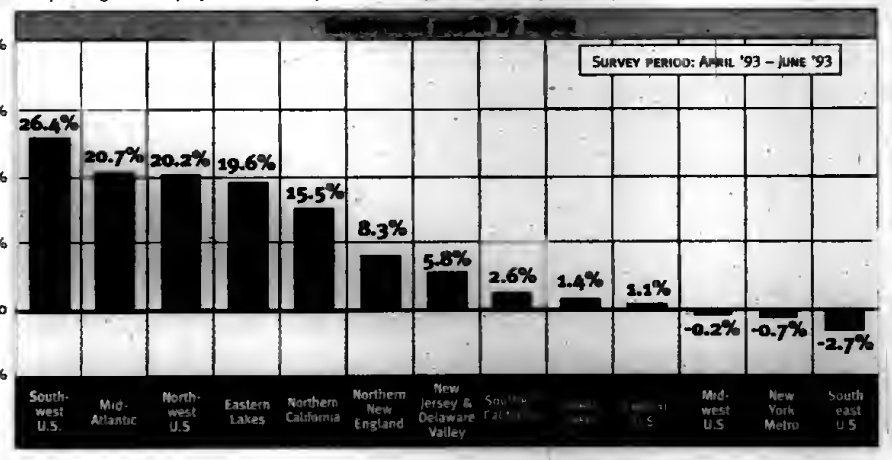

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Leasing and the upgrade time bomb

shopper alert!

By Timothy E. Duncan

Unplanned upgrades are to leasing what soft drinks and french fries are to the fast-food industry: the primary source of profits. Many companies spend 25% to 50% more than necessary on leasing because managers don't properly prepare for the inevitable need to upgrade.

Equipment that is functional today probably won't be in two years without significant enhancements to the system. Leasing companies know this. In fact, lessors have found that 70% to 80% of the leased equipment in their portfolios will be upgraded within 36 months of the lease's inception. Users who don't plan for these upgrades will come up short.

The basic problem with financing an upgrade is that the lessor is usually your only financing source. Of course, your company can always buy the upgrade and forego financing, but if you haven't protected yourself up front, this could be costly. A better alternative is to improve your lease management by heeding these 10 recommendations.

1. Acknowledge the problem

Virtually all types of equipment, from PCs to mainframes, are upgradable, and much of the equipment that you lease will probably be upgraded before the lease runs out. Your company will likely spend more money on upgrading equipment than buying it in the first place.

2. Plan ahead

Speak with users and determine when upgrades might occur during the lease and what the range of costs might be. Also, get an idea of how upgrades will extend the equipment's life, and compare this life expectancy with the term of the lease you expect to sign.

3. Use competition to your advantage

Lessors will be extremely aggressive in going after the initial lease. Use this competitive environment to your advantage by having lessors include rates for possible upgrades in initial bids. Rates for upgrades are normally expressed as a percentage of the cost of the upgrade that the lease rate will pay back, based on interest rates in effect at the time the upgrade is installed.

4. Incorporate into the lease the right to upgrade

You should have the unrestricted right to upgrade equipment as long as you don't materially diminish the value of the equipment and you agree to return the equipment to its original condition when the lease expires.

5. Reserve the right to return identical equipment

Lower cost items of leased equipment such as PCs and workstations will often be upgraded indiscriminately by users who pay for the upgrades out of their own budgets. In many cases, it is impractical and costly to remove these upgrades, and the best alternative is to return identical equipment to the lessor and leave the upgraded equipment in place.

6. Reserve the right to purchase the equipment at the end of the lease

Lessors generally do not bid on upgrading another lessor's equipment unless the user can purchase the equipment from the original lessor at the end of the lease. When they are providing initial lease rates, ask lessors to provide a purchase quote for the equipment at the end of the proposed lease. The lease should state that you have a right to purchase the equipment at this purchase price or fair market value, whichever is lower, at the end of the lease's initial term.

7. Incorporate into the lease the right to purchase the equipment at certain points during the lease

In most cases, your only option will be to purchase the upgrade yourself if your lessor refuses to provide you with competitive upgrade pricing or is no longer able to provide additional financing. As a result, insist on the right to buy out the lessor at certain points during the lease (quarterly or semiannually) at specified prices. You can always buy the equipment back from the lessor, order the upgrade and obtain financing for both the buy-back and the upgrade if the original lessor cannot meet your needs.

8. Reserve the right to extend the lease

Upgrades can significantly extend the life of the original equipment because they often occur in the lease's later stages. Insist on a provision to extend the lease beyond its initial term.

Obtain extension rate pricing from all lessors bidding on the original lease, and consider it an important factor in awarding the transaction. Ask for the right to extend the term at the lower of the extension rates or the fair market rental value for the desired extension period.

9. Focus on more than budget numbers

Many users pay attention only to the monthly payment and not the length of the term, especially when an upgrade and a lease extension occur at the same time. By stretching the length of the lease to lower monthly rental payments, users increase the likelihood that the equipment will need another upgrade before the end of the lease. A higher lease rate and shorter lease term may sometimes be a better option.

10. Maximize leasing expertise

Sophisticated lessees save millions of dollars in overall costs by devoting sufficient resources to manage the process. It is important to be well-grounded in advanced financial concepts and have adequate external and internal resources to develop long-term strategies.

Duncan is an attorney and president of Duncan Resources Group, a Boston advisory firm that assists companies with purchasing, leasing and financing high-tech equipment.

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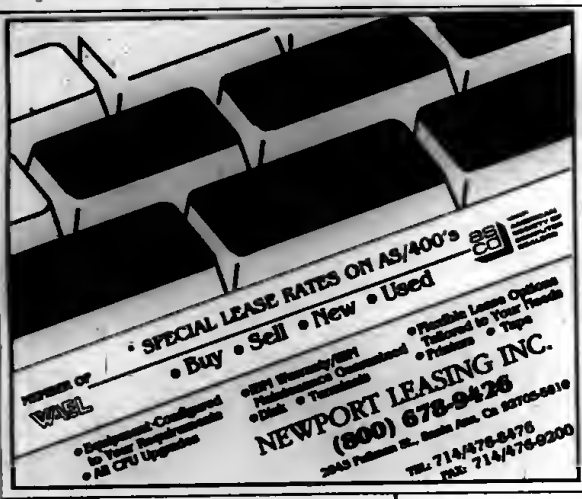

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PS/2 Model 55SX	$650	$700
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PS/2 Model 90-Off	$1,700	$1,700
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Compaq Prolinea 4/66	$2,000	$1,500
Prolinea 486/50	$1,450	$2,650
Portable 386	$650	$675
SLT-386	$925	$700
LTE-286	$600	$600
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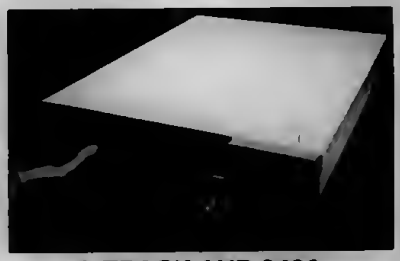

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Friday Stock Ticker

Gainers

Percent

Artel Communication Corp (H)	20.6
Sequoia Systems Inc.	16.1
Phoenix Software Corp.	15.4
Rexon Inc.	14.3
Computrend Corp.	13.4
CE Software	13.2
Augus Corp.	11.8
DSC Communications	11.6

Dollar

Phoenix Software Corp	5.25
DSC Communications	3.00
ITT Corp	2.88
Texas Instruments	3.25
Computrend Corp	9.13
Lotus Development Corp.	2.88
Australian Info Trend Corp.	2.75
Synoptics Networks Corp. (H)	2.75

Losers

Percent

Zeos Inc.	-18.9
Gupta Software	-14.7
Stratacom Inc.	-14.0
Westernbo Digital Corp.	-13.5
Synoptics Communications	-12.6
3 COM Corp	-12.6
Microsoft Inc.	-12.5
Dell Computer Corp.	-12.3

Dollar

Zeos Inc.	-4.13
Hewlett Packard Co. (H)	-5.38
Matsushita Electronics	-4.63
Apple Computer Inc.	-4.63
BMC Software Inc.	-3.50
3 COM Corp.	-3.25
IBM	-3.13

[redacted]

Greatest misses

Wall Street analysts answer the question: What is the worst investment recommendation you've ever made?

"I once owned Wang, so that was the worst *personal* investment.

"Then I picked Computer Associates at 7, watched it go up to 19 and then back down to 4. Of course, people didn't remember the 7 bit, only the 19. I see it's back up now, though."

— Vice president of institutional research

"With 20 years' experience, I can't remember which one was worst. A recent one was Borland — it's been cut in half. I was recommending it in the 40s, and now it's in the 20s. Subsequently, I quit following the stock."

— Technology analyst

"The worst was a Buy on IBM when it was around 80.

"Another mistake was not taking a Buy rating off when I planned to. That was DEC in 1987. It was about 199 when I left for vacation, and I didn't take the Buy rating off. It was 150 when I got back."

— Analyst

"I was recommending AMD back when they went into what I call their period of agony — the mid- to late 1980s. I wrote them down quite a bit before I threw in the towel.

"The only good thing was, I didn't quit at the very bottom. It kept going down after I gave up on it.

"Often the worst decision for analysts is one we didn't recommend that we should have. I was recommending Intel until late December, then I went Neutral. I should have waited another month and a half. I missed about the last 20 points."

— Vice president of research

"Mine was Wang Labs at about 15 bucks. It was about three years before disaster struck, but we tend to have clients with long memories."

— Analyst

"It was probably Perception Technology in the voice response business. The story was they were working on a bunch of big deals with resellers, and it didn't happen.

"I think it was probably 12 or 14, and it went to 2 or 3. You try to forget these things."

— Partner

Compiled by Derek Slater.

Exch	52-Week Range			Close	30 Wk Net Chng	30 Wk Pct Chng
COMMUNICATIONS AND NETWORK SERVICES						
OTC	40.00	9.63	3 COM Corp	22.63	-3.25	-12.6
NYS	80.75	62.63	American Info Techs Corp	78.75	2.75	3.6
NYS	63.88	40.63	AT&T (H)	61.63	-0.38	-0.6
OTC	3.94	0.75	Artel Communication Corp (H)	3.94	0.88	28.6
OTC	24.50	10.25	Banyan Systems Inc.	15.00	-0.38	-2.4
NYS	86.75	64.25	Bell Atlantic Corp.	56.75	0.25	0.4
NYS	57.50	46.75	BellSouth Corp	53.63	0.50	0.9
NYS	8.00	3.83	Bolt, Beranek & Newman (H)	7.75	-0.50	-6.5
OTC	38.50	9.50	Brooktrout Technology	10.88	-1.38	-11.2
NYS	108.38	46.00	Cabletron Systems (H)	101.50	1.63	1.6
OTC	22.75	3.75	Centigram Communications	20.00	-0.25	-1.2
OTC	43.50	10.00	Chipcom Corp.	38.75	-0.38	-1.0
OTC	56.25	21.38	Cisco Systems Inc.	51.25	-1.25	-3.3
OTC	16.38	5.30	Compression Labs Inc	12.63	1.00	8.0
OTC	36.00	11.25	CrossComm	29.75	1.00	3.3
OTC	4.63	1.00	Data Switch Corp.	2.88	0.13	4.5
NYS	19.88	12.38	Digital Comm. Assoc.	12.50	-0.75	-2.0
OTC	12.75	4.50	Digital Systems Int'l. Inc	5.75	0.00	0.0
OTC	48.13	4.25	DSC Communications	48.13	5.00	11.6
OTC	9.50	6.75	Fibronix Int'l. Inc.	6.63	0.13	1.9
OTC	24.75	8.75	Filebet Corp	13.25	-1.00	-8.2
OTC	4.38	1.50	Gandalf Technologies Inc	2.88	-0.25	-8.0
OTC	2.00	0.69	Gateway Communications	1.08	0.00	0.0
NYS	15.75	2.88	General Datacomm Inds	14.25	-0.13	-0.9
ASE	3.75	2.00	Go Video	2.94	0.00	0.0
NYS	37.75	31.13	GTE Corp.	35.38	0.25	0.7
NYS	85.13	62.50	ITT Corp.	85.13	3.88	4.8
OTC	57.13	30.75	MCI Communications Corp	55.50	1.00	1.8
OTC	8.50	2.25	Microcom Inc	3.50	-0.50	-12.5
OTC	24.25	4.75	Netrix Corp	5.25	0.00	0.0
OTC	19.00	8.75	Network Computing Devices	9.25	-0.50	-5.1
NYS	15.00	5.38	Network Equipment Tech.	7.69	-1.00	-11.3
OTC	20.13	8.00	Network General	9.13	-0.13	-1.4
OTC	15.75	8.38	Network Systems Corp	9.00	-0.13	-1.4
OTC	44.75	7.50	Newbridge Networks Corp. (H)	43.25	2.75	6.8
NYS	66.00	30.50	Northern Telecom Ltd	38.25	1.88	5.2
OTC	35.25	22.50	Novell Inc.	26.50	-1.25	-4.7
NYS	92.50	76.00	Nynex Corp.	80.50	0.75	0.9
OTC	30.00	14.50	Octel Communications Corp	20.75	-0.50	-3.8
OTC	6.13	3.38	Pairgain Data Comm Networks	4.00	-0.38	-8.8
OTC	30.50	10.25	Pictureltel Corp	20.50	1.25	6.5
OTC	15.25	4.63	Proteon Inc.	5.13	-0.13	-2.4
NYS	35.00	14.25	Scientific Atlanta Inc.	30.75	-2.00	-6.1
NYS	40.75	29.69	Southwestern Bell Corp	37.88	-1.13	-2.9
NYS	35.25	21.88	Sprint Corp.	31.75	1.00	3.3
OTC	27.00	10.50	Standard Microsystems Corp	18.88	-0.50	-2.9
OTC	18.50	8.88	Stratacom Inc	12.25	-2.00	-14.0
OTC	42.75	9.75	Synoptics Communications	32.00	4.63	-12.6
OTC	7.00	3.88	Telebit Corp	4.00	0.25	-5.9
OTC	9.38	2.13	Telematics Int'l. Inc.	6.63	-0.38	-5.4
OTC	24.50	13.38	US Robotics	21.75	0.50	2.4
NYS	45.00	35.25	U S West Inc.	44.00	-0.25	-0.6
OTC	55.30	12.00	Wellfleet Communications	48.75	-0.75	-1.6
OTC	14.75	7.00	Xircom	14.25	0.25	3.0
PC AND WORKSTATIONS						
OTC	5.75	2.50	Advanced Logic Research	3.75	0.00	0.0
OTC	65.25	40.75	Apple Computer Inc.	40.75	3.50	-7.9
OTC	24.25	11.25	AST Research Inc.	15.00	0.38	3.8
NYS	10.63	2.63	Commodore Int'l.	2.88	-0.13	-4.2
NYS	61.75	23.25	Compaq Computer Corp	53.38	-0.75	-3.0
OTC	69.88	15.13	Dell Computer Corp	17.75	-2.30	-12.2
NYS	89.75	50.25	Hewlett Packard Co. (H)	80.75	-5.38	-6.2
NYS	38.50	14.13	Silicon Graphics	34.75	0.13	0.4
OTC	41.00	22.30	Sun Microsystems Inc.	28.75	-2.38	-7.8
NYS	32.38	27.75	Tandy Corp.	30.13	0.25	0.8
OTC	7.00	2.25	Zeos International Ltd	3.88	-0.25	-6.1
LARGE SYSTEMS						
ASE	18.38	4.63	Amdahl Corp	5.38	-0.13	-2.3
NYS	8.75	4.25	Convex Computer	5.63	-0.25	-4.3
OTC	6.13	1.88	Cray Computer	3.13	-0.25	-7.4
NYS	50.88	19.00	Cray Research Inc.	27.30	0.00	0.0
NYS	13.88	7.13	Data General Corp.	9.50	-0.50	-5.0
NYS	49.25	30.38	Digital Equipment Corp	40.75	-1.75	-4.1
NYS	38.63	26.75	Harris Corp	37.88	0.25	0.7
NYS	100.38	45.88	IBM	69.38	-3.13	-4.0
OTC	22.00	5.50	Kendall Square Research	17.25	0.63	3.8
NYS	127.50	83.00	Matsushita Electronics	117.38	-4.63	-3.8
OTC	23.75	8.75	NetFrame	16.00	-0.13	-0.8
OTC	15.50	9.25	Parallan Computer	13.25	0.25	1.9
OTC	19.00	6.00	Pyramid Technology	17.75	-0.25	-3.8
OTC	24.00	13.75	Sequent Computer Sys.	18.38	-0.50	-2.8
OTC	10.75	1.38	Sequoia Systems Inc.	2.25	0.31	16.1
NYS	48.38	29.30	Stratus Computer Inc.	31.00	0.25	0.8
NYS	16.00	9.88	Tandem Computers Inc	12.00	-0.88	-6.8
OTC	19.00	10.63	TeraData Systems	18.25	1.00	5.8
NYS	13.88	7.75	Unisys Corp	11.13	-0.25	-2.2
SOFTWARE						
OTC	74.00	25.25	Adobe Systems Inc. (H)	67.63	-0.38	-0.6
OTC	20.75	10.25	Aldus Corp.	17.63	1.88	11.9
OTC	14.25	5.30	American Software Inc.	7.88	-0.13	-1.6
OTC	28.13	9.25	Ask Computer Systems	11.13	0.13	1.1
OTC	56.50	32.25	Autodesk Inc	53.25	1.25	2.4
OTC	13.00	2.50	Bachman Info. Systems	3.00	-0.13	-4.0
OTC	43.00	32.00	BGS Systems Inc.	32.00	-1.75	-5.2
OTC	84.13	37.25	BMC Software Inc.	46.75	-3.30	-7.0
OTC	28.75	17.00	Boole & Babbage	24.25	0.25	1.0
OTC	69.00	17.50	Borland Int'l. Inc.	24.30	1.63	7.1
OTC	5.38	3.00	CE Software	3.75	0.44	13.7
ASE	30.75	6.25	Cheyenne Software Inc.	29.13	2.00	7.6
OTC	19.50	8.25	ChipSoft	10.50	0.25	2.4
OTC	9.25	5.63	Cognos Inc.	6.63	0.13	1.9
NYS	31.38	10.88	Computer Associates	27.63	0.13	0.5
NYS	12.38	2.75	Computervision Corp.	3.00	-0.25	-6.1
OTC	34.75	19.25	Compuware Corp.	26.38	3.13	13.4
OTC	14.75	5.75	Consare Inc.	7.25	-0.50	-6.5
OTC	12.25	10.75	Cosel Corp	16.75	1.00	6.3
OTC	23.00	3.25	Easel Corp	5.75	-0.63	-9.8
OTC	75.25	12.00	4th Dimension	18.13	0.38	2.1
OTC	19.50	5.38	Frame Technology (L)	5.88	-0.13	-2.1
OTC	31.75	10.00	Group 1 Software	10.00	-2.00	-16.7
OTC	35.75	18.00	Gupta	16.00	0.38	2.4
OTC	8.75	3.50	Hogan Systems Inc.	7.50	-0.25	-3.2
OTC	25.75	11.25	IMRS	18.75	-0.50	-2.7
OTC	38.00	18.50	Information Resources	35.75	0.25	0.7
OTC	24.88	6.06	Informix Corp	23.75	0.50	4.6
OTC	16.75	8.88	Intergraph Corp	9.00	0.00	0.0
OTC	13.63	6.00	Interleaf Inc.	8.63	0.25	3.0
OTC	18.00	6.25	Intersolv Inc. (L)	8.25	-0.75	-10.7
OTC	18.00	7.75	Knowledgeware Inc.	9.38	-0.63	-6.3
OTC	54.75	26.00	Legent Corp.	33.50	2.88	9.4
OTC	36.75	14.75	Lotus Development	34.50	1.00	3.0
OTC	23.00	6.50	MathSoft	6.75	0.13	1.9
OTC	23.25	5.25	McAfee Associates	6.75	-0.25	3.6
OTC	11.63	1.88	Meca Software	10.75	-0.38	-3.5
OTC	12.00	3.25	Mentor Graphics	10.63	-0.13	-1.2
OTC	48.00	27.25	Micro Focus	33.38	-0.63	-1.8
OTC	17.25	4.38	Micrograf Inc	5.50	-0.13	-2.2
OTC	98.00	65.50	Microsoft Corp.	89.75	-0.38	-0.4
OTC	65.63	14.00	Oracle Corp.	43.25	0.88	2.1
OTC	34.25	15.38	Parametric Technology	30.25	1.25	4.1
OTC	40.50	22.50	Peoplesoft	29.00	-2.75	-8.7
OTC	2.13	3.50	Phoenix Technologies	5.63	0.00	0.0
OTC	40.00	22.00	Powersoft (L)	27.75	1.75	6.7
OTC	41.50	17.00	Platinum Software	75.00	-0.50	-2.0
OTC	25.00	11.25	Platinum Technology	13.38	-0.38	-2.7
OTC	61.30	29.00	Progress Software Corp.	39.75	5.25	15.4
OTC	13.25	2.56	Quarterdeck Office Sys.	3.31	0.15	-5.9
OTC	22.75	11.75	Rainbow Technologies Inc. (H)	27.00	0.75	2.9
OTC	32.25	4.00	Rasterops	9.50	0.75	8.6
OTC	15.25	3.63	Ross Systems	12.75	0.75	6.3
OTC	27.25	9.13	Sapiens Intl. Corp. N.V.	25.50	2.25	9.7
OTC	16.50	6.75	Software Publishing Corp.	7.30	-0.25	-3.2
OTC	12.00	2.00	Software Toolworks Inc.	9.38	0.00	0.0
OTC	3.50	0.75	Spinnaker Software	1.25	-0.13	-9.1
OTC	12.75	3.25	State of the Art	9.50	-0.75	-7.3
NYS	24.63	14.25	Sterling Software Inc.	19.50	0.00	0.0
OTC	21.50	8.00	Stout Dynamics Research	17.50	-0.75	-4.1
OTC	72.75	21.00	Sybase Inc.	69.88	0.75	1.1
OTC	41.00	5.88	Symantec Corp.	15.00	0.11	0.8
NYS	12.50	5.25	Systems Center Inc.	10.38	0.15	1.2
OTC	25.50	10.00	System Software Assoc.	20.00	0.75	3.9
OTC	6.38	2.50	Tesnic Corp	3.38	0.13	3.8
OTC	22.75	9.13	VieuLogic Systems	17.30	-0.63	-3.8
OTC	23.30	6.75	Walker Interactive Systems	2.30	-1.88	71.8
OTC	3.19	1.38	Wordstar	1.63	0.00	0.0
SEMICONDUCTORS						
NYS	32.88	7.38	Advanced Micro Devices	20.75	-0.38	-1.8
NYS	21.38	9.00	Analog Devices Inc.	19.25	0.50	2.7
OTC	25.13	2.63	Atmel Corp (H)	25.13	1.88	8.1
OTC	7.75	2.75	Chips and Technologies	3.63	-0.25	-6.5
OTC	39.75	13.00	Cirrus Logic	19.63	0.75	4.0
OTC	14.38	7.38	Cypress Semiconductor Corp	13.63	0.25	1.9
NYS	16.13	0.00	Dallas Semiconductor	14.75	0.63	4.4
OTC	60.62	25.75	Intel Corp.	55.50	-1.00	-1.8
NYS	14.63	8.88	LSI Logic Corp	14.63	1.00	7.3
OTC	33.25	33.75	Lattice Semiconductor	27.25	-1.88	-6.4
NYS	35.00	13.13	Micron Technology (H)	34.25	2.50	7.9
NYS	88.00	37.13	Motorola Inc	81.38	-2.63	-3.1
NYS	16.00	8.50	National Semiconductor (H)	15.75	1.00	6.8
OTC	16.50	6.50	Sierra Semiconductor	2.50	-0.38	-6.3
OTC	43.25	22.25	SynOpsys	40.25	1.25	3.2
NYS	69.63	32.25	Texas Instruments	69.63	3.25	4.9
OTC	8.88	6.00	VLSI Technology	2.63	-0.38	-4.7
OTC	10.38	2.13	Weitek (H)	9.13	-0.75	-7.6
ASE	9.63	4.00	Western Digital Corp.	4.00	-0.63	-13.5
OTC	38.30	16.30	Xilinx	34.38	0.63	1.9
OTC	23.00	13.00	Zilog Inc.	24.25	-6.13	18.9
PERIPHERALS MANUFACTURERS						
OTC	39.25	11.75	American Power Conversion	34.00	-3.00	-8.1
OTC	20.16	13.84	Banctec Inc.	17.75	-0.50	-2.7
OTC	12.00	6.25	Cambex Corp.	6.50	-0.50	-7.1
ASE	18.38	6.50	Cognitronics Corp	7.75	-0.38	-4.6
NYS	25.50	9.88	Conner Peripherals (L)	9.88	-0.63	-6.0
OTC	38.50	10.75	Creative Technologies Inc.	27.63	3.13	3.9
OTC	30.75	14.25	Data Race Inc.	19.75	-0.50	-2.5
ASE	17.00	4.75	Datakam Corp	8.88	-0.63	-6.8
NYS	18.75	5.06	EMC Corp. (H)	16.75	1.38	2.9
OTC	10.50	5.38	Emulex Corp	7.00	-0.13	-1.8
OTC	19.00	13.25	Evans & Sutherland	16.00	-0.50	3.0
OTC	33.00	10.00	Exabyte (L)	10.00	-0.88	-8.0
OTC	28.00	7.00	Intelligent Info. Systems	25.00	1.00	4.2
OTC	8.88	0.75	Iomega Corp (L)	4.00	-0.19	-4.5
OTC	21.25	5.75	IPL Systems Inc.	7.75	-0.25	-3.1
OTC	24.00	10.75	Komag Inc.	38.50	-1.75	-4.6
OTC	19.63	5.88	Maxtor Corp	6.30	0.00	0.0
OTC	11.25	5.75	Micropolis Corp.	7.00	-0.25	-3.8
NYS	117.00	94.75	3M Corp	108.38	0.38	0.3
OTC	7.75	6.00	Printronix Inc.	6.75	0.25	3.8
NYS	12.25	6.00	QMS Inc.	8.88	0.00	0.0
OTC	17.88	10.63	Quantum Corp. (L)	10.63	-1.25	-10.5
OTC	12.75	3.13	Radius Inc.	4.00	0.50	14.3
NYS	16.50	7.50	Recognition Equipment	13.88	-0.63	-4.3
OTC	13.88	4.30	Rexon Inc.	4.63	-0.94	-9.0
OTC	22.38	12.00	Seagate Technology	15.63	0.75	5.0
OTC	45.00	18.00	Storage Technology	36.50	-0.38	-1.0
NYS	27.00	16.00	Tektronix Inc.	28.00	0.00	0.0
NYS	80.88	66.75	Xerox Corp	77.38	2.25	3.0
SERVICES						
OTC	23.75	14.25	American Mgmt. Systems	16.50	-1.00	-5.7
NYS	4.75	2.75	Amrcomp Inc.	3.00	0.00	0.0
OTC	35.75	18.75	Analysts Int'l.	27.25	1.00	3.8
NYS	96.13	38.75	Auto Data Processing	47.25	-2.13	-4.3
NYS	17.25	11.22	Computer Corp.	14.30	0.00	0.0
NYS	17.38	13.13	Computrend Inc.	14.50	0.00	0.0
OTC	8.25	4.50	Computer Horizons	2.38	-0.38	-6.0
NYS	80.30	52.00	Computer Sciences	77.75	2.38	3.2
NYS	9.25	6.50	Computer Task Group	7.25	0.25	3.0
NYS	40.30	22.00	CompUSA Inc.	31.88	-1.63	-4.9
OTC	14.25	4.00	Corporate Software	12.00	0.00	0.0
OTC	19.75	7.38	Egghead Discount Software	8.25	-0.38	-4.3
NYS	35.88	25.25	General Motors E (EDS)	30.13	0.00	0.0
OTC	25.50	9.50	Inacom Corp	20.50	-0.63	-3.0
OTC	15.38	6.25	Intelligent Electronics	12.00	0.50	4.0
OTC	13.00	6.63	Medisel	11.50	-0.88	-7.1
OTC	16.25	5.75	Microrage Inc.	15.75	0.50	3.3
OTC	43.00	21.75	Paychex	39.00	0.00	0.0
NYS	87.25	32.88	Policy Management Sys.	36.00	-2.38	-6.2
NYS	38.50	16.81	Reynolds and Reynolds	35.88	-1.88	-5.0
OTC	13.00	22.00	SEI Corp	30.88	-0.13	-0.4
OTC	24.38	18.88	Shared Medical Systems	23.00	0.88	4.0
OTC	12.63	8.75	SHL Systemhouse	10.00	0.25	2.4
OTC	29.25	18.25	Software Spectrum Inc.	28.75	1.50	5.5
OTC	35.75	22.30	Surgard Data Systems	30.25	-0.25	-0.8
NYS	4.38	1.13	Ultimate Corp.	3.30	0.13	3.7

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

Cabletron results rise

Showing growth across its product line, Cabletron Systems, Inc. last week posted first-quarter profits of $26.7 million, an increase of 49% from the like period one year ago. Revenue also rose 49%, to $131 million, the Rochester, N.H., networking products vendor said.

Adobe growth off

Adobe Systems, Inc. last week reported second-quarter earnings of $14.4 million, off 2% from the year-earlier period. Revenue in the period was $79.6 million, up 14% from the comparable period last year, the Mountain View, Calif., developer said.

Chapter 11 for Cygnet

Cygnet Systems, Inc., a San Jose, Calif., maker of optical storage jukeboxes, filed for Chapter 11 bankruptcy protection after it was unable to resolve a long-standing dispute with Eastman Kodak Co., which had filed suit against it in 1992 seeking repayment of a loan made in 1986. The two companies reached an agreement earlier this year in which Cygnet was given time to either recapitalize or be acquired.

SHORT TAKES Client/server tools developer Blyth Holdings, Inc. in Foster City, Calif., posted fourth-quarter profits of $258,768 on revenue of $2.8 million. ... Central Point Software, Inc. in Beaverton, Ore., has agreed to acquire Maxa Corp., a Glendale, Calif., developer of Macintosh diagnostic products. ... ECCS, Inc., a Tinton, N.J., systems integrator, has filed an initial public offering (IPO) of 1.7 million shares at a price of $6 a share. ... Madge NV, a San Jose, Calif., Token Ring adapter supplier, has filed an IPO of 6 million shares, which are expected to sell for $10 to $12 a share.

Compaq struggles with success

By Michael Fitzgerald
HOUSTON

A year after firing the salvo that began the PC price war, Compaq Computer Corp. is slowing expansion plans as it struggles to keep pace with demand.

Last year's June 15 announcement of its aggressively priced ProLinea, DeskPro/I and Contura lines sent shock waves through the PC industry. The resulting consumer response allowed Compaq to more than double its U.S. market share, from 4% to 10% (see chart).

But with growth has come some pain. Outside of its well-publicized supply problems, prominent issues include a restructuring of its field sales force, which involved shifting much of the operation to Houston, rather than leaving the sales force out in the field; and a temporary retreat from plans to produce a new low-end product line aimed at retail channels, such as Wal-Mart Stores, Inc., in which Compaq currently does not have a presence.

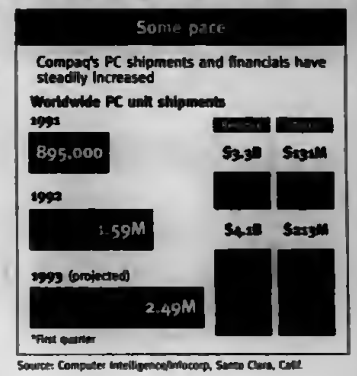
Ross A. Cooley, Compaq North America's senior vice president of sales, agreed "absolutely" that Compaq has had to pause as it tries "to digest" its growth, which rose 247% from the first quarter last year to the first quarter this year.

Besides slowing expansion efforts, Compaq has shifted extra lines to a new vertically integrated manufacturing process to help meet demand.

Compaq expected to have the new product line and channel expansion in place by now, but Cooley said these moves will not happen until the late third quarter. Compaq's Direct Plus direct-marketing effort has also been slower to develop than the firm expected, ironically because the unit has the same backlog problems that Compaq's reseller channel has.

Barbara Krumland, who runs Direct Plus, said the unit should earn 8% to 10% of Compaq's sales by the fourth quarter.

The traditional reseller channel, which Cooley affirmed will continue to be by far Compaq's largest distribution channel, has loudly questioned the wisdom of Compaq's expanding its channels at a time when dealers cannot get all the products they need. The fallout from Compaq's combination of rapid channel expansion and backlogs remains unclear; although Compaq has not experienced a mass revolt from its resellers, several said privately that they now discourage salespeople from even mentioning the company's name.



Source: Computer Intelligence/Infocorp, Santa Clara, Calif.

Analysts said, however, that by getting the Compaq name in front of buyers it used to concede to other companies, Compaq's channel expansion so far has been a fundamental part of the firm's comeback from the financial difficulties that caused the ouster of founder Joseph R. "Rod" Canion in November 1991.

Compaq's backlog situation is improving, and it may be largely caught up with demand by the end of the third quarter, according to company officials.

Where Compaq was once known for technological excellence, it now is less focused on being first to market with technology. Rather, "Compaq's innovation has been in pricing and channel and re-engineering the company, and that's probably more profound," said Bruce Stephen, director of PC hardware and pricing research at International Data Corp. in Framingham, Mass.

Among the changes instituted at Compaq in the last year were the following:

- Major strategic shifts in its server business aimed at giving it leadership in the downsizing arena [CW, June 14].
- Vastly expanded distribution channels, including direct sales.
- Obsessive cost-analysis for every piece of every product.
- Revamped back-office systems to handle higher order levels.

While analysts said Compaq's product strategies show that it is listening to its customers, users have noted over the last year that they have less contact with the company. Most stopped short of saying less contact is bad, however.

"They're not being as proactive as in the past," said Douglas Murphy, director of information systems at Comcast Corp.'s data center. Murphy said his firm accepts this as Compaq becomes "leaner and meaner."

Though Compaq leads IBM in several European markets and sells more servers in the U.S. than IBM sells, analysts were largely skeptical that Compaq can meet its stated goal of catching IBM by 1996.

Project Ruby: Gem of a plan

A key factor in Compaq's turnaround was an idea known internally as Project Ruby.

Launched in November 1991, Project Ruby set out to determine how Compaq could compete with low-priced PC vendors. The group, established as an independent business unit, laid the groundwork for the ProLinea family, whose base model was a 386SX desktop priced at less than $900.

However, Project Ruby has had a much more far-reaching impact for Compaq, particularly in cost-cutting.

While ProLinea came in at as much as 55% below DeskPro/M pricing in June 1992, one of the most important things Project Ruby did was show Compaq that it could produce low-priced systems and that it did not need Asian manufacturers for that purpose. That changed Compaq's entire design philosophy.

"There wasn't a person at Compaq who believed that we could cut even 30% off our costs before Ruby," said Richard Swingle, who ran Ruby and is now Compaq's vice president of desktop marketing for the PC division.

Swingle's team ripped apart desktop systems from all sorts of PC vendors to figure out how much the parts cost. It also attacked hallowed Compaq standards, which went so far as to mandate inspection of rubber bands.

Swingle held weekly cost-cutting sessions that initially humiliated the engineers, who were used to putting in the best technology they could find, regardless of cost. Now engineers have learned to justify every part that costs more than one used by a low-priced competitor.

For instance, Compaq uses a 145W power supply in its five-slot ProLinea instead of the cheaper 60W power supply used by a mass-market competitor. Swingle said Compaq's engineers found that a 60W power supply could not support the box if all five slots were used.

Ruby's precepts also guided the server division into faster, more cost-conscious product development cycles. Engineers who once said they needed more time to develop servers because of their complexity now race to meet deadlines and get products out as fast as their PC brethren.

Compaq also applied the Ruby concept to the creation of Direct Plus, its direct marketing effort. The company said it intends to run Ruby-like independent business units sparingly.

—Michael Fitzgerald

Wysiwyg

Ever play a prank on your users?

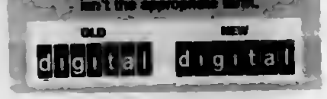
Here's what two of your colleagues have done...

Dating game

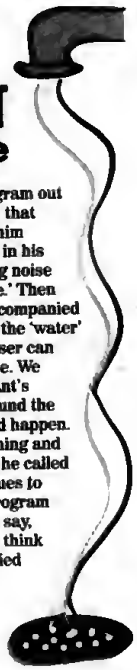
"I was working in a shop that had a sign-on security system for data entry clerks. I was interested in meeting one of the clerks in particular, so I rigged her system so that she had to answer a bunch of difficult questions before she could get logged on. Her supervisor, who was in on the prank, took me over to help her out with her 'trouble.' I spent time with her, helping her answer the tough questions. Today, that woman is my wife."

Jim MacFarland
System engineer
CBIS
Cincinnati

DEC recently unveiled its new logo. "Drastic redesign" probably isn't the appropriate term.



Water, water everywhere



"There's a joke program out there called DRAIN.COM that beeps at the user to tell him water has been detected in his drive. It makes a gurgling noise and says, 'Draining drive.' Then it says 'Drying drive,' accompanied by a drying sound. After the 'water' has been removed, the user can press any key to continue. We put this on oue accountant's machine and waited around the corner to see what would happen. When the gurgling, draining and beeping sounds started, he called over some of his colleagues to check it out. After the program was done, we heard him say, 'Wow, those guys at IBM think of everything.' We just died laughing."

Paul Stagnoli
Programmer/analyst
Sebastiani Vineyards
Sonoma Valley, Calif.

Got any anecdotes about your users, your boss or your job? Call Lory Zottola Dix at (800) 343-6474, ext. 236. If we use your idea, we'll send you a gift.

The 5th Wave *by* Rich Tennant

Inside Lines

Consortium [illegible]

A group of 35 vendors is expected to announce a plan this week to develop a common Unix data management interface for such functions as data backup, file migration, compression, security and storage. Reportedly called the Data Management Interface Group, it was described by industry sources as "very similar in scope" to the Common Open Systems Environment (COSE) coalition set up earlier in the year to focus on a unified Unix look and feel. One definite similarity to COSE, at least in its original incarnation: Sun, Hewlett-Packard and IBM are all said to have signed on with the data management group, while DEC was not on the list as of last week.

Check the fine print

Microsoft, apparently swamped with support calls for DOS 6.0, is sending at least some users who procured the operating system bundled with their PC back to the hardware vendor that installed the software. [illegible] Microsoft is merely enforcing a [illegible] respects further [illegible] installed — including [illegible] distributed by the hardware [illegible]

[illegible]

[illegible] director of marketing for [illegible] takes the place of Douglas Walker, [illegible] senior product manager for Windows [illegible] has taken a position as director of the solutions providers group.

Another false start?

Earlier this month, smart hub giant SynOptics Communications told *Computerworld* it would finally ship its Ethernet switching module — originally slated for release in the first quarter and based on Kalpana's LAN switch — this week. However, last week SynOptics once again reneged. The company did say that the module will incorporate Kalpana's new two-way Ethernet technology, which doubles LAN bandwidth [CW, May 25]. SynOptics attributed the many delays to having to build in an SNMP Management Information Base, which Kalpana did not have in its original design.

Dodging delays

After experiencing development problems, The Dodge Group is back on schedule with its Open Series of client/server financial applications and plans to ship a general-ledger component by the end of the year. The Waltham, Mass., firm, founded two years ago by Frank Dodge, has been beta-testing the general-ledger component at an undisclosed site since April. Dodge said the software is initially targeted at IBM's RS/6000 and Sun's Solaris server platforms. Open Series will be priced using an algorithm for concurrent use, with typical configurations listing for about $225,000, Dodge said.

Minnesota Software Systems Development certainly rallied attention to itself last week. Things got rolling when the company unveiled a challenge from Computer Associates by offering to give away 2 million copies of its financial software. That action was followed with a news release denying rumors that Microsoft was buying the company. Next came a statement that the company was indeed being acquired and "moving to the West Coast," though no purchaser was named. Then a release came out quoting the company's president saying Microsoft was indeed going to purchase the company. Phew! Finally, the news was out — maybe. The real news happened when a news wire apparent advising editors to ignore the whole thing. Two days of trying to reach Minnesota Software met with an unannounced phone. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-5001 or 76537,2415, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 220-8555.

Given Chipcom's track record, no wonder the others have to sell on price.

OCTOBER 18, 1988

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JANUARY 29, 1990

We were the first to introduce a multi-protocol, multi-network intelligent switching hub. Suddenly, it became possible to run up to 3 Ethernet, 7 Token Rings or 4 FDDI networks, software configurable, in a single hub.

APRIL 29, 1991

We were the first to put Port Switching into an intelligent hub. With it, you can do moves, adds and changes, within or across networks or segments with a couple of clicks of a mouse. Without it, you get to make trips to the wiring closet and move cables. A lot of trips.

MAY 13, 1991

First with network self-healing. With our Network Control System software, our built-in fault tolerance and our Port-Switching technology, your network can not only tell you there's a problem, but is also smart enough to route itself around it automatically. Network service contioues without interruption, while you schedule the fix at your convenience.

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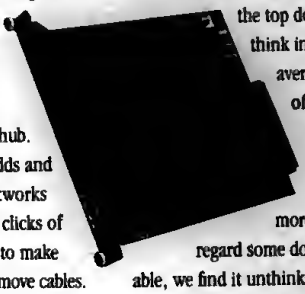
Instead of building products aimed at departmental LANs, Chipcom has always designed and engineered its products for networks of thousands of nodes. So it's only natural that while others see networking from the bottom up, we view it from the top down. While they think in terms of an average network life of three years, we see a corporate asset good for ten years or more. While others regard some downtime as acceptable, we find it unthinkable.



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Or what the heck, ask for all three.

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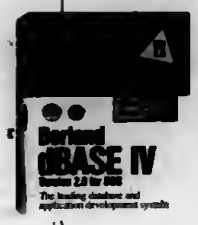
—*PC Magazine*, May 11, 1993



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